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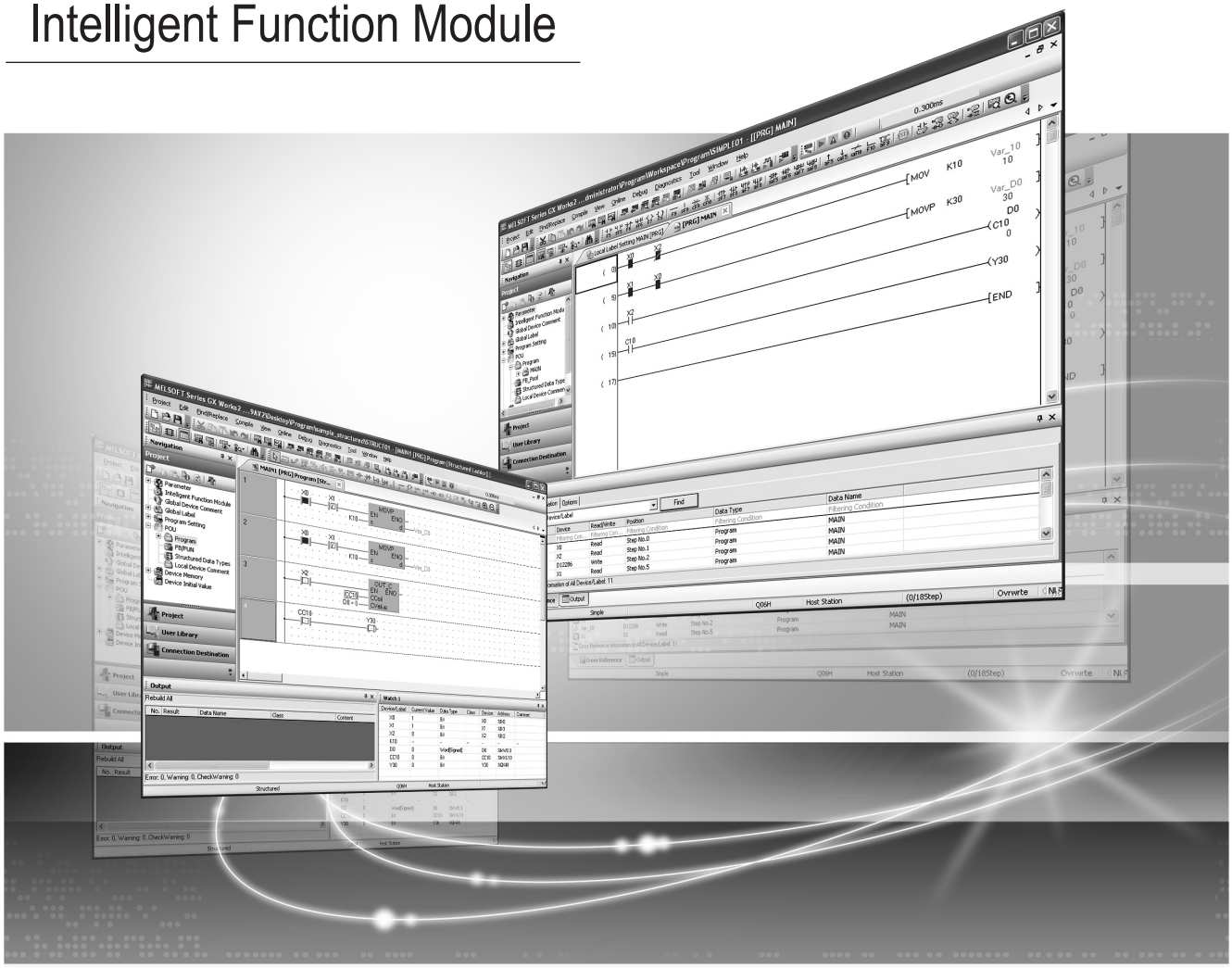
MELSOFT

Integrated FA Software

GX Works2 Version 1

Operating Manual

Intelligent Function Module



MELSOFT
Integrated FA Software

SW1DNC-GXW2-E

● SAFETY PRECAUTIONS ●

(Always read these instructions before using this product.)

Before using this product, thoroughly read this manual and the relevant manuals introduced in this manual and pay careful attention to safety and handle the products properly.
The precautions given in this manual are concerned with this product. For the safety precautions of the programmable controller system, refer to the User's Manual for the CPU module.

In this manual, the safety precautions are ranked as "⚠WARNING" and "⚠CAUTION".

⚠ WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Note that the ⚠CAUTION level may lead to serious consequences according to the circumstances. Always follow the precautions of both levels because they are important for personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[Design Instructions]

⚠WARNING

- **When data change, program change, or status control is performed from a personal computer to a running programmable controller, create an interlock circuit outside the programmable controller to ensure that the whole system always operates safely.**
  Furthermore, for the online operations performed from a personal computer to a programmable controller CPU, the corrective actions against a communication error due to such as a cable connection fault should be predetermined as a system.

[Startup/Maintenance Instructions]

⚠CAUTION

- **The online operations performed from a personal computer to a running programmable controller CPU (Program change when a programmable controller CPU is RUN, forced input output operation, operating status change such as RUN-STOP switching, and remote control operation) must be executed after the manual has been carefully read and the safety has been ensured.**
  When changing a program while a programmable controller CPU is RUN, it may cause a program corruption in some operating conditions. Fully understand the precautions described in GX Works2 Version 1 Operating Manual (Common) before use.
- **The positioning test functions of OPR, JOG, inching or positioning data for QD75/LD75 positioning module must be executed with the programmable controller set to STOP after the manual has been carefully read and the safety has been ensured. Specially when executing the function on the network system, ensure the safety thoroughly since the machinery whose operation cannot be checked by an operator may be activated. The operation failure may cause the injury or machine damage.**
- **The online operations performed on the intelligent function module such as data writing to flash ROM must be executed after the operations of the external devices have been carefully considered and the safety has been ensured.**

●CONDITIONS OF USE FOR THE PRODUCT●

(1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

REVISIONS

The manual number is written at the bottom left of the back cover.

Print date	Manual number	Revision
Jan., 2010	SH(NA)-080921ENG-A	First edition
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Japanese Manual Version SH-080901-I

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INTRODUCTION

Thank you for purchasing the Mitsubishi integrated FA software, MELSOFT series.
Before using the product, thoroughly read this manual to develop full familiarity with the functions and performance to ensure correct use.

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■ MANUALS

Related manuals are separately issued according to the purpose of their functions in GX Works2.

● Related manuals

The manuals related to this product are shown below.
Refer to the following tables when ordering required manuals.

1) Operation of GX Works2

Manual name	Manual number (Model code)
GX Works2 Version 1 Operating Manual (Common) Explains the system configuration of GX Works2 and the functions common to Simple project and Structured project such as parameter setting, operation method for the online function. (Sold separately)	SH-080779ENG (13JU63)
GX Works2 Version 1 Operating Manual (Simple Project) Explains operation methods such as creating and monitoring programs in Simple project of GX Works2. (Sold separately)	SH-080780ENG (13JU64)
GX Works2 Version 1 Operating Manual (Structured Project) Explains operation methods such as creating and monitoring programs in Structured project of GX Works2. (Sold separately)	SH-080781ENG (13JU65)
GX Works2 Beginner's Manual (Simple Project) Explains fundamental operation methods such as creating, editing, and monitoring programs in Simple project for users inexperienced with GX Works2. (Sold separately)	SH-080787ENG (13JZ22)
GX Works2 Beginner's Manual (Structured Project) Explains fundamental operation methods such as creating, editing, and monitoring programs in Structured project for users inexperienced with GX Works2. (Sold separately)	SH-080788ENG (13JZ23)

2) Structured programming

Manual name	Manual number (Model code)
MELSEC-Q/L/F Structured Programming Manual (Fundamentals) Explains the programming methods, types of programming languages, and other information required to create structured programs. (Sold separately)	SH-080782ENG (13JW06)
MELSEC-Q/L Structured Programming Manual (Common Instructions) Explains the specifications and functions of common instructions such as sequence instructions, basic instructions, and application instructions, that can be used in structured programs. (Sold separately)	SH-080783ENG (13JW07)
MELSEC-Q/L Structured Programming Manual (Application Functions) Explains the specifications and functions of application functions that can be used in structured programs. (Sold separately)	SH-080784ENG (13JW08)
MELSEC-Q/L Structured Programming Manual (Special Instructions) Explains the specifications and functions of special instructions such as module dedicated instruction, PID control instruction, and built-in I/O function dedicated instruction, that can be used in structured programs. (Sold separately)	SH-080785ENG (13JW09)
FXCPU Structured Programming Manual (Device & Common) Explains the devices and parameters provided in GX Works2 for structured programming. (Sold separately)	JY997D26001 (09R925)
FXCPU Structured Programming Manual (Basic & Applied Instruction) Explains the sequence instructions provided in GX Works2 for structured programming. (Sold separately)	JY997D34701 (09R926)
FXCPU Structured Programming Manual (Application Functions) Explains the application functions provided in GX Works2 for structured programming. (Sold separately)	JY997D34801 (09R927)

3) Operation of iQ Works

Manual name	Manual number (Model code)
iQ Works Beginner's Manual Explains fundamental operation methods such as managing the system using MELSOFT Navigator and using system labels for users inexperienced with GX Works2. (Sold separately)	SH-080902ENG (13JZ44)

4) User's manual of each intelligent function module

Point

The Operating Manuals are included on the CD-ROM of the software package in a PDF file format. Manuals in printed form are sold separately for single purchase. Order a manual by quoting the manual number (model code) listed in the table above.

● Purpose of this manual

This manual explains the operation related to the intelligent function modules using the functions supported by GX Works2.
Manuals for reference are listed in the following table according to their purpose.
For information such as the contents and number of each manual, refer to the list of 'Related manuals'.

1) Operation of GX Works2

Purpose		GX Works2 Installation Instructions	GX Works2 Beginner's Manual		GX Works2 Version 1 Operating Manual			
			Simple Project	Structured Project	Common	Simple Project	Structured Project	Intelligent Function Module
Installation	Learning the operating environment and installation method	Details						
	Learning a USB driver installation method				Details			
Operation of GX Works2	Learning all functions of GX Works2				Outline			
	Learning the project types and available languages in GX Works2				Outline			
	Learning the basic operations and operating procedures when creating a simple project for the first time		Details					
	Learning the basic operations and operating procedures when creating a structured project for the first time			Details				
	Learning the operations of available functions regardless of project type.				Details			
	Learning the functions and operation methods for programming				Outline	Details	Details	
	Learning data setting methods for intelligent function module							Details

2) Operations in each programming language

For details of instructions used in each programming language, refer to the section 3 on the next page.

Purpose		GX Works2 Beginner's Manual		GX Works2 Version 1 Operating Manual	
		Simple Project	Structured Project	Simple Project	Structured Project
Simple Project	Ladder				
	SFC	*1 			
	ST				
Structured Project	Ladder				
	SFC	*1 			
	Structured ladder/FBD				
	ST				

*1: MELSAP3 and FX series SFC only

3) Details of instructions in each programming language (for QCPU (Q mode)/LCPU)

Purpose		MELSEC-Q/L/F Structured Programming Manual	MELSEC-Q/L Structured Programming Manual			MELSEC-Q/L Programming Manual	MELSEC-Q/L/QnA Programming Manual		Manual for module to be used
		Fundamentals	Common Instructions	Special Instructions	Application Functions	Common Instructions	PID Control Instructions	SFC	–
All languages	Learning details of programmable controller CPU error codes, special relays, and special registers					Details			
Using ladder language	Learning the types and details of common instructions					Details			
	Learning the types and details of instructions for intelligent function modules								Details
	Learning the types and details of instructions for network modules								Details
	Learning the types and details of instructions for the PID control function						Details		
Using SFC language	Learning details of specifications, functions, and instructions of SFC (MELSAP3)							Details	
Using structured ladder/FBD /ST language	Learning the fundamentals for creating a structured program	Details							
	Learning the types and details of common instructions		Details						
	Learning the types and details of instructions for intelligent function modules			Outline					Details
	Learning the types and details of instructions for network modules			Outline					Details
	Learning the types and details of instructions for the PID control function			Outline			Details		
	Learning the types and details of application functions				Details				

4) Details of instructions in each programming language (for FXCPU)

Purpose		MELSEC-Q/L/F Structured Programming Manual	FXCPU Structured Programming Manual			FXCPU Programming Manual		
		Fundamentals	Device & Common	Basic & Applied Instruction	Application Functions	FX0, FX0S, FX0N, FX1, FXU, FX2C	FX1S, FX1N, FX2N, FX1NC, FX2NC	FX3G, FX3U, FX3UC
Using ladder language	Learning the types and details of basic/ application instructions, descriptions of devices and parameters					Details	Details	Details
Using SFC language	Learning details of specifications, functions, and instructions of SFC					Details	Details	Details
Using structured ladder/ FBD/ST language	Learning the fundamentals for creating a structured program	Details						
	Learning the descriptions of devices, parameters, and error codes		Details					
	Learning the types and details of sequence instructions			Details				
	Learning the types and details of application instructions				Details			

● How to read this manual

Screen display

Describes the screen display procedure.
Follow the ⇒ and select [(menu)] to open the screen.
*Screen display may depend on the CPU. In that case, typical example is described.

Chapter heading

Index on the right of the page number clarifies the chapter of currently open page.

Display contents

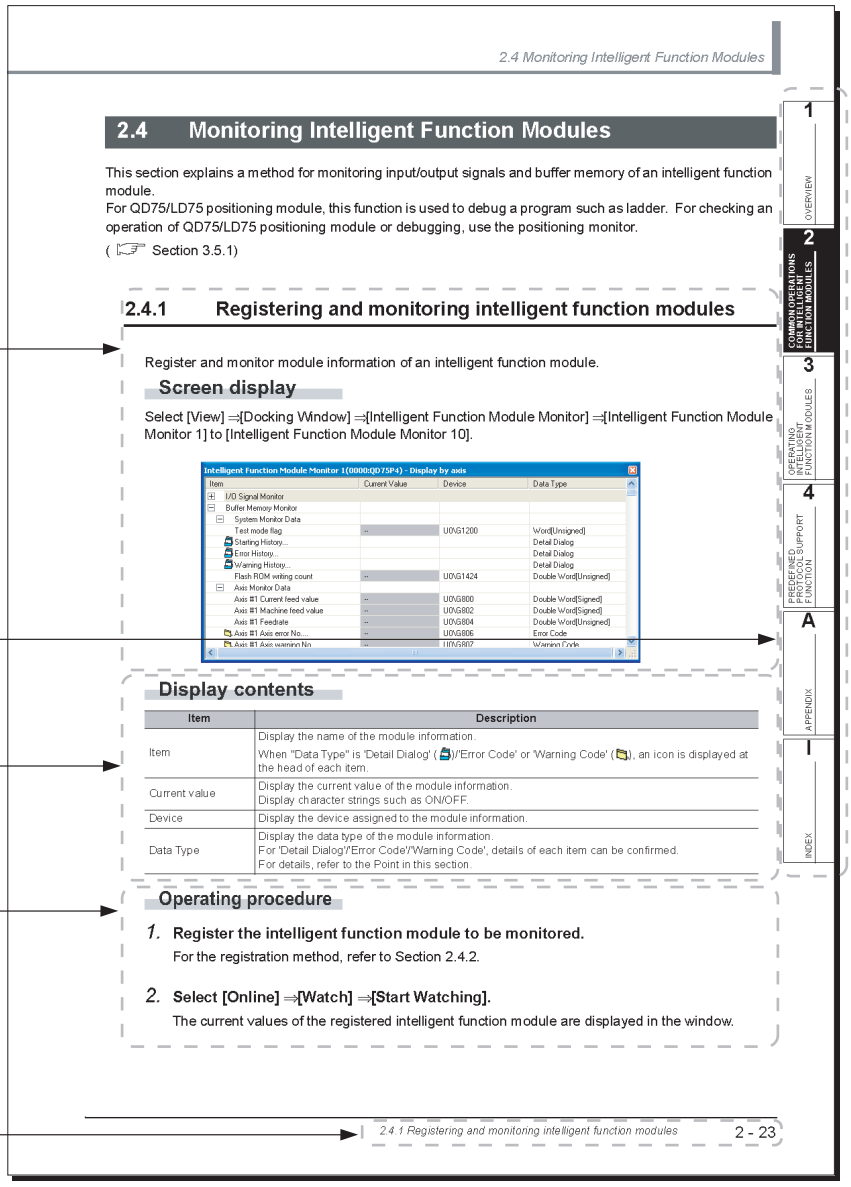
Describes the display contents in the screen.

Operating procedure

Describes the operating procedure of the function.

Section title

Clarifies the section of currently open page.

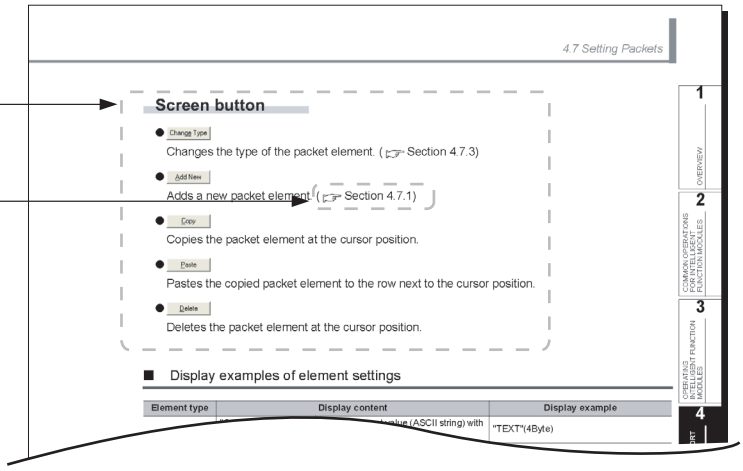


Screen button

Describes the buttons in the screen.

Reference location

☞ leads to the reference location and reference manual.



This manual also uses the following columns:

Point

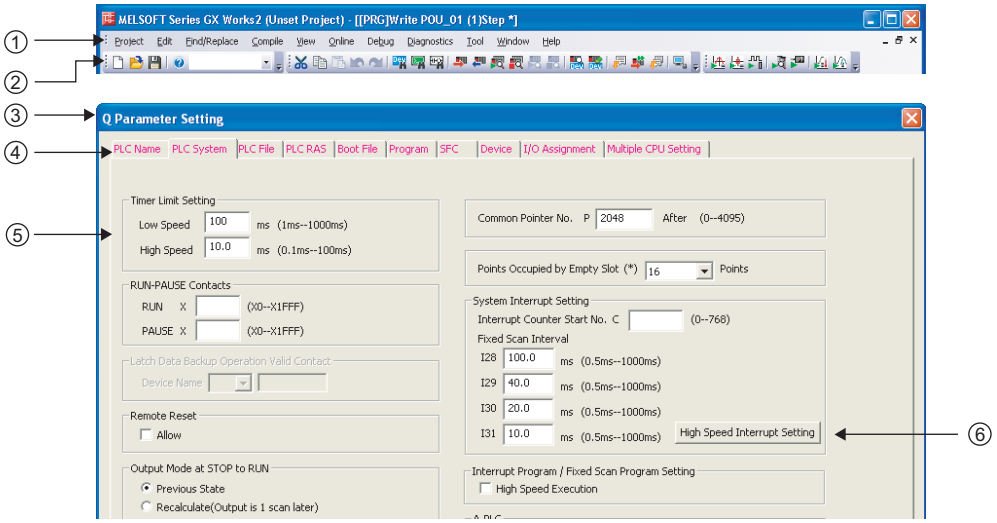
This explains notes requiring attention or useful functions relating to the information given on the same page.

Restrictions

This explains restrictions relating to the information given on the same page.

● Symbols used in this manual

The following shows the symbols used in this manual with descriptions and examples.



No.	Symbol	Description	Example
①	[ ]	Menu name on a menu bar	[Project]
②		Toolbar icon	
③	(Underline)	Screen name	Q Parameter Setting screen
④	《 》	Tab name in a screen	<<PLC System>>
⑤	" "	Item name in a screen	"Timer Limit Setting"
⑥		Button on a screen	High Speed Interrupt Setting button
–		Keyboard key	Ctrl

■ GENERIC TERMS AND ABBREVIATIONS IN THIS MANUAL

This manual uses the generic terms and abbreviations listed in the following table to discuss the software packages and programmable controller CPUs. Corresponding module models are also listed if needed.

Generic term and abbreviation		Description
GX Works2		Generic product name for SWnDNC-GXW2-E (n: version)
Existing application		–
	GX Developer	Generic product name for SWnD5C-GPPW-E, SWnD5C-GPPW-EA, SWnD5C-GPPW-EV, and SWnD5C-GPPW-EVA (n: version)
	GX IEC Developer	Generic product name for SWnD5C-MEDOC3 (n: version)
	GX Simulator	Generic product name for SWnD5C-LLT-E, SWnD5C-LLT-EA, SWnD5C-LLT-EV, and SWnD5C-LLT-EVA (n: version)
	GX Configurator	Generic product name for GX Configurator-AD/DA/SC/CT/TC/TI/FL/PT/AS/QP
MELSOFT Navigator		Product name for the integrated development environment included in SWnDNC-IQWK (iQ Platform compatible engineering environment MELSOFT iQ Works) (n: version)
iQ Works		Abbreviation for iQ platform supporting engineering environment MELSOFT iQ Works
Personal computer		Generic term for personal computer on which Windows® operates
Basic model QCPU		Generic term for Q00J, Q00, and Q01
High Performance model QCPU		Generic term for Q02, Q02H, Q06H, Q12H, and Q25H
Universal model QCPU		Generic term for Q00UJ, Q00U, Q01U, Q02U, Q03UD, Q03UDE, Q04UDH, Q04UDEH, Q06UDH, Q06UDEH, Q10UDH, Q10UDEH, Q13UDH, Q13UDEH, Q20UDH, Q20UDEH, Q26UDH, Q26UDEH, Q50UDEH, and Q100UDEH
Built-in Ethernet port QCPU		Generic term for Q03UDE, Q04UDEH, Q06UDEH, Q10UDEH, Q13UDEH, Q20UDEH, Q26UDEH, Q50UDEH, and Q100UDEH
QCPU (Q mode)		Generic term for Basic model QCPU, High Performance model QCPU, and Universal model QCPU
LCPU		Generic term for L02, L02-P, L26-BT, and L26-PBT
CPU module		Generic term for QCPU (Q mode) and LCPU
A/D converter module		Generic term for Q64AD, Q68ADV, Q68ADI, Q64AD-GH, Q62AD-DGH, Q68AD-G, Q66AD-DG, and L60AD4
D/A converter module		Generic term for Q62DAN, Q64DAN, Q68DAVN, Q68DAIN, Q62DA, Q64DA, Q68DAV, Q68DAI, Q62DA-FG, Q66DA-G, and L60DA4
QD75M/QD75MH		Generic term for QD75M1, QD75M2, QD75M4, QD75MH1, QD75MH2, and QD75MH4
QD75 positioning module		Generic term for QD75P1, QD75P2, QD75P4, QD75P1N, QD75P2N, QD75P4N, QD75D1, QD75D2, QD75D4, QD75D1N, QD75D2N, QD75D4N, QD75M1, QD75M2, QD75M4, QD75MH1, QD75MH2, and QD75MH4
LD75 positioning module		Generic term for LD75P4 and LD75D4
QD75/LD75 positioning module		Generic term for QD75 positioning module and LD75 positioning module
Serial communication module		Generic term for QJ71C24, QJ71C24-R2, QJ71C24N, QJ71C24N-R2, QJ71C24N-R4, LJ71C24, and LJ71C24-R2
Simple Motion Module		Generic term for LD77MH4, LD77MH16
Q series C24N		Generic term for QJ71C24N, QJ71C24N-R2, and QJ71C24N-R4
L series C24		Generic term for LJ71C24 and LJ71C24-R2
Common instruction		Generic term for sequence instructions, basic instructions, application instructions, data link instructions, multiple CPU dedicated instructions, and multiple CPU high-speed transmission dedicated instructions
Special instruction		Generic term for module dedicated instructions, PID control instructions, socket communication function instructions, built-in I/O function instructions, and data logging function instructions

1 OVERVIEW

This manual describes operating methods of the intelligent function module, such as setting parameters, writing/reading data, monitoring.
For the features and functions of GX Works2, refer to the following manual.
☞GX Works2 Version 1 Operating Manual (Common)

1.1 Overview 1-2
1.2 Features of Operations of Intelligent Function Module 1-2
1.3 Intelligent Function Module Data 1-5
1.4 List of Functions 1-10

1.1 Overview

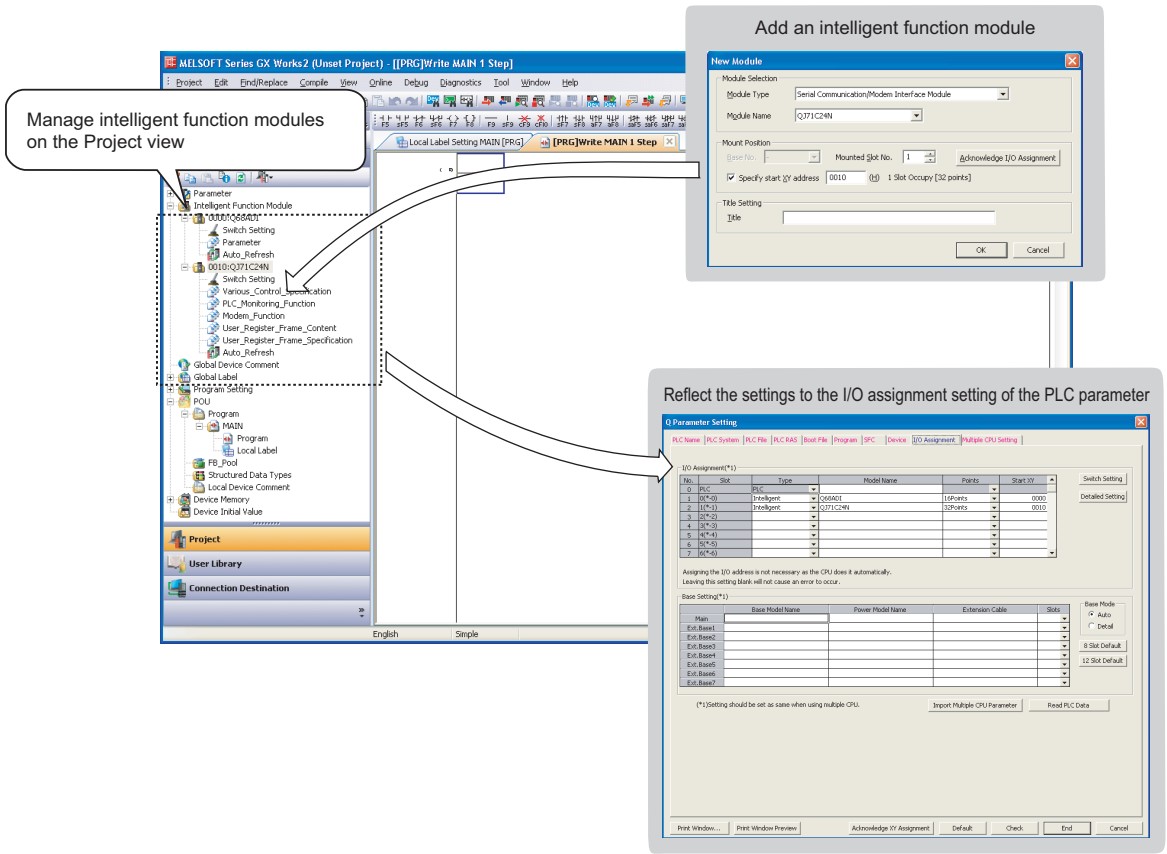
This manual describes operations of the intelligent function module with GX Works2.
The operations of the intelligent function module with GX Works2 enable to easily set, monitor, and test settings and parameters, such as the intelligent function module parameters (initial setting/auto refresh) for the analog module, the system settings for the serial communication module, and the positioning data and parameters for the positioning module, without regard for the input/output signals and buffer memory.

For the detailed settings of the intelligent function module, refer to the user's manual of the module to be used.

1.2 Features of Operations of Intelligent Function Module

■ Adding intelligent function modules

By adding an intelligent function module to a project, its data such as the intelligent function module parameters (initial setting/auto refresh) can be set, monitored, and tested.
In addition, the I/O assignment information of the added intelligent function module are reflected to the I/O assignment setting of the PLC parameter.

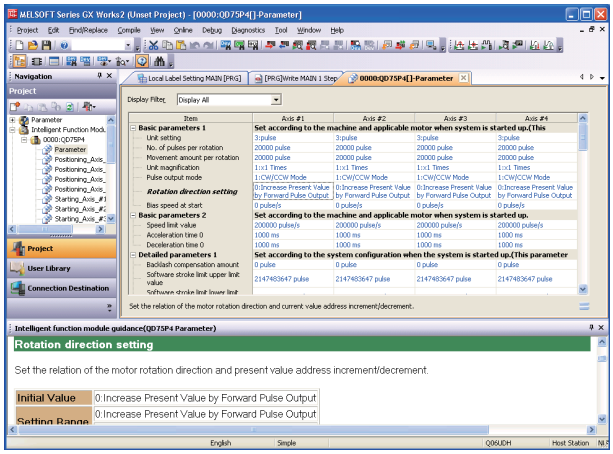


■ Setting data to intelligent function modules

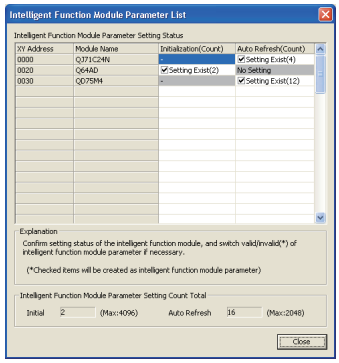
● Intelligent function module parameters (initial setting/auto refresh)

The intelligent function module parameters can be set by opening the data of each intelligent function module on the Project view.
On the intelligent function module parameter list, the number of set parameters (initial setting/auto refresh) can be checked. In addition, the enabled/disabled status of the parameters can be switched.
The number of settable parameters (initial setting/auto refresh) may differ depending on the CPU module to be used.
For details of the limit of the number of parameters depending on the CPU module, refer to Section 2.1.7.

<Data setting screen for the intelligent function module>



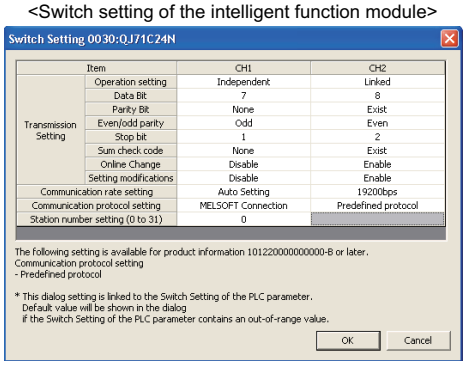
<Intelligent function module parameter list>



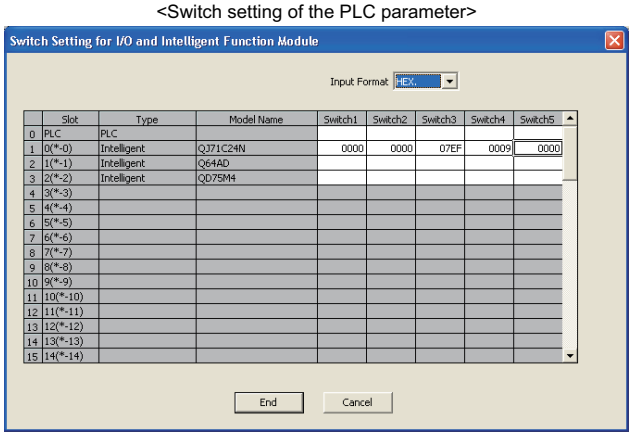
● Switch setting of intelligent function module

The switch setting of the intelligent function module can easily be performed without regard to the order of bits.
The switch setting of the intelligent function module links with the switch setting of the PLC parameter.

<Switch setting of the intelligent function module>



<Switch setting of the PLC parameter>



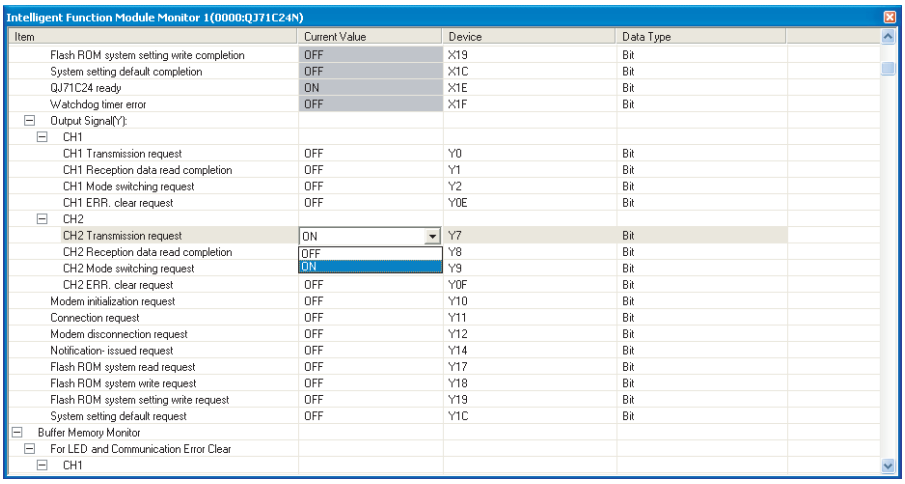
● Writing/reading data to/from intelligent function module

Using the Write to PLC and Read from PLC functions, the intelligent function module parameters can be written/read. Data can also be written/read to/from the buffer memory and flash ROM.

■ Monitoring/testing intelligent function modules

On the Intelligent Function Module Monitor windows, the input/output signals and buffer memory can be monitored on module by module basis.
The input/output signals and buffer memory can be tested by changing their current values on the Intelligent Function Module Monitor window.

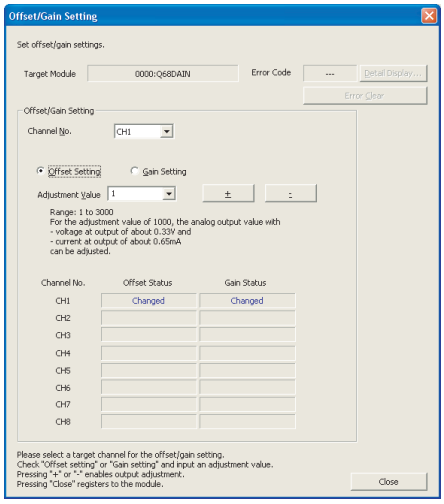
<Monitoring of the serial communication module>



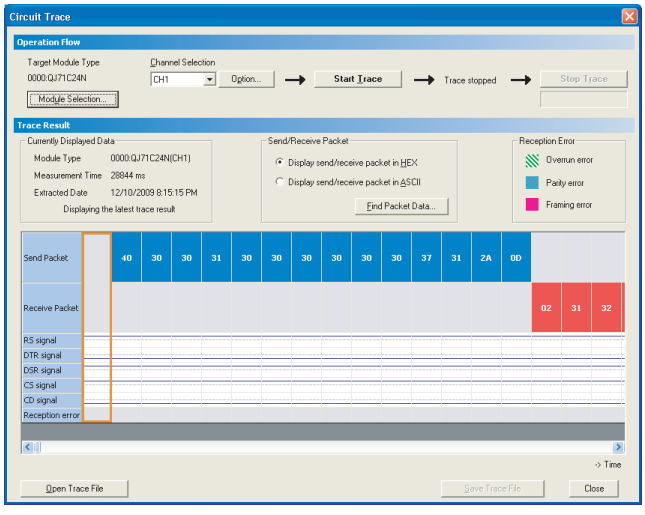
■ Intelligent function module tools

The offset/gain setting of the analog module and temperature input module, the circuit trace of the serial communication module, and etc. can be performed using the intelligent function module tools.
For details of the intelligent function module tools, refer to Chapter 3.

<Offset/gain setting of the analog module>



<Circuit trace of the serial communication module>



1.3 Intelligent Function Module Data

This section explains intelligent function module data which can be used in GX Works2.
For details of each item, refer to the user's manual of the module to be used.

Intelligent function module parameters are created when the intelligent function data are set. The intelligent function module parameters include the data for initial setting and auto refresh.
The following table shows the intelligent function module data and the data registered to the intelligent function module parameters as initial setting and auto refresh.
Note that the auto refresh configures the settings to automatically store the error information and status information stored in buffer memory to the specified device in the programmable controller CPU.

● QCPU (Q mode)

Module type	Module model	Data	Description	Intelligent function module parameter	
				Initial setting	Auto refresh
Analog Module	Q64AD Q68ADV Q68ADI Q64AD-GH Q62AD-DGH Q68AD-G Q66AD-DG	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings and warning output function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	Q62DAN Q64DAN Q68DAVN Q68DAIN Q62DA Q64DA Q68DAV Q68DAI Q62DA-FG Q66DA-G	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings and warning output function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	Q64AD2DA	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter (A/D conversion part)	Set the basic settings, scaling function settings, shift function, input signal error detected function, and logging function.	○	–
		Parameter (D/A conversion part)	Set the basic settings, scaling function settings, and shift function.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	Q61LD	Parameter	Set the basic settings and warning output function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
Temperature Input Module	Q64RD Q64RD-G Q64TD Q64TDV-GH Q68TD-G-H02 Q68TD-G-H01 Q68RD3-G	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings, warning output function settings, and scaling function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○

Module type	Module model	Data	Description	Intelligent function module parameter	
				Initial setting	Auto refresh
Temperature Control Module	Q64TCTT Q64TCTTBW Q64TCRT Q64TCRTBW Q64TCTTN Q64TCTTBWN Q64TCRTN Q64TCRTBWN	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings, control basic parameters, control detailed parameters, warning function settings, and CT settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	Q62HLC	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter (MAIN)	Set the basic setting, control basic parameters, control detailed parameters, warning function settings, and scaling settings.	○	–
		Parameter (Program Control Function)	Set the program control function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
Counter Module	QD62 QD62E QD62D	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings and counter function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	QD63P6	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings and periodic pulse counter function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	QD64D2	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings, coincidence output function, and continuous comparison function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	QD60P8-G	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings and warning output function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	QD65PD2	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○

Module type	Module model	Data	Description	Intelligent function module parameter	
				Initial setting	Auto refresh
QD75 Type Positioning Module	QD75P1 QD75P2 QD75P4 QD75P1N QD75P2N QD75P4N	Parameter	Set the basic parameters 1, basic parameters 2, detailed parameters 1, detailed parameters 2, OPR basic parameters, and OPR detailed parameters.	–	–
		Positioning Data Axis #n	Set the positioning data including the pattern, control method, acceleration/deceleration time, and address for each axis. (n = number of axes)	–	–
		Block Starting Data Axis #n	Set the execution sequence and execution conditions for the positioning data. (n = number of axes)	–	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	QD75D1 QD75D2 QD75D4 QD75D1N QD75D2N QD75D4N	Parameter	Set the basic parameters 1, basic parameters 2, detailed parameters 1, detailed parameters 2, OPR basic parameters, and OPR detailed parameters.	–	–
		Positioning Data Axis #n	Set the positioning data including the pattern, control method, acceleration/deceleration time, and address for each axis. (n = number of axes)	–	–
		Block Starting Data Axis	Set the execution sequence and execution conditions for the positioning data. (n = number of axes)	–	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	QD75M1 QD75M2 QD75M4	Parameter	Set the basic parameters 1, basic parameters 2, detailed parameters 1, detailed parameters 2, OPR basic parameters, and OPR detailed parameters.	–	–
		Servo parameter	Set the servo basic parameters, servo regulation parameters, servo extended parameters, and servo extended parameters 2.	–	–
		Positioning Data Axis #n	Set the positioning data including the pattern, control method, acceleration/deceleration time, and address for each axis. (n = number of axes)	–	–
		Block Starting Data Axis #n	Set the execution sequence and execution conditions for the positioning data. (n = number of axes)	–	–
		Auto Refresh	Set the devices for auto refresh.	–	○
	QD75MH1 QD75MH2 QD75MH4	Parameter	Set the basic parameters 1, basic parameters 2, detailed parameters 1, detailed parameters 2, OPR basic parameters, and OPR detailed parameters.	–	–
		Servo Parameter	Set the basic setting parameters, gain/filter parameters, extension setting parameters, I/O setting parameters, extension settings, and special settings.	–	–
		Positioning Data Axis #n	Set the positioning data including the pattern, control method, acceleration/deceleration time, and address for each axis. (n = number of axes)	–	–
		Block Starting Data Axis #n	Set the execution sequence and execution conditions for the positioning data. (n = number of axes)	–	–
		Auto Refresh	Set the devices for auto refresh.	–	○
QD70 Type Positioning Module	QD70P4 QD70P8 QD70D4 QD70D8 QD72P3C3	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic parameters and OPR parameters.	○	–
		Positioning Data Axis #n	Set the positioning data including the operation pattern, control method, and acceleration/deceleration time. (n = number of axes)	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○

Module type	Module model	Data	Description	Intelligent function module parameter	
				Initial setting	Auto refresh
Serial Communication/ Modem Interface Module	QJ71C24N QJ71C24N-R2 QJ71C24N-R4 QJ71C24 QJ71C24-R2	Switch Setting	Set the intelligent function module switches.	–	–
		Various Control Specifications	Make system settings for transmission control, MC protocol, nonprocedural protocol, and bidirectional protocol.	–	–
		PLC Monitoring Function	Make system settings to use the programmable controller CPU monitoring function.	–	–
		Modem Function	Make system settings for data communications using the model function. (Not available for QJ71C24N-R4)	–	–
		User Register Frame Content	Set the contents of user frames.	–	–
		User Register Frame Specification	Set the frame numbers for data transmission/reception.	–	–
		Auto Refresh	Set the devices for auto refresh.	–	○
AS-i Master Module	QJ71AS92	Auto Refresh (System Common)	Set the devices for auto refresh.	–	○
		Auto Refresh (System Individual)	Set the devices for auto refresh.	–	○
FL-net (OPCN-2) Interface Module	QJ71FL71-F01 QJ71FL71-T-F01 QJ71FL71-B2-F01 QJ71FL71-B5-F01 QJ71FL71 QJ71FL71-T QJ71FL71-B2 QJ71FL71-B5	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
MODBUS® Interface Module	QJ71MT91 QJ71MB91	Switch Setting	Set the intelligent function module switches.	–	–
		Basic Parameter (Router Information)	Set the TCP/UDP/IP, GX Works2 connection.	○	–
		Basic Parameter (Preferred Node Specification (MODBUS®/TCP settings)	Set the MODBUS®/TCP.	○	–
		Automatic Communication Parameter	Set the automatic communication parameter.	○	–
		MODBUS® Device Assignment Parameter	Set the MODBUS® device assignment parameter.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○

● LCPU

Module type	Module model	Data	Description	Intelligent function module parameter	
				Initial setting	Auto refresh
Analog Module	L60AD4 L60DA4	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings and warning output function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
Temperature Control Module	L60TCTT4 L60TCTT4BW L60TCRT4 L60TCRT4BW	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings, control basic parameters, control detailed parameters, warning function settings, and CT settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
Counter	LD62 LD62D	Switch Setting	Set the intelligent function module switches.	–	–
		Parameter	Set the basic settings and warning output function settings.	○	–
		Auto Refresh	Set the devices for auto refresh.	–	○
LD75 Type Positioning Module	LD75P4 LD75D4	Parameter	Set the basic parameters 1, basic parameters 2, detailed parameters 1, detailed parameters 2, OPR basic parameters, and OPR detailed parameters.	–	–
		Positioning Data Axis #n	Set the positioning data including the pattern, control method, acceleration/deceleration time, and address for each axis. (n = number of axes)	–	–
		Block Starting Data Axis #n	Set the execution sequence and execution conditions for the positioning data. (n = number of axes)	–	–
		Auto Refresh	Set the devices for auto refresh.	–	○
Simple Motion	LD77MH4 LD77MH16	Simple Motion Module Setting	Start the simple motion module setting tool.	–	–
		Auto Refresh	Set the devices for auto refresh.	–	○
Serial Communication Module	LJ71C24 LJ71C24-R2	Switch Setting	Set the intelligent function module switches.	–	–
		Various Control Specifications	Make system settings for transmission control, MC protocol, nonprocedural protocol, and bidirectional protocol.	–	–
		PLC Monitoring Function	Make system settings to use the programmable controller CPU monitoring function.	–	–
		Modem Function	Make system settings for data communications using the model function.	–	–
		User Register Frame Content	Set the contents of user frames.	–	–
		User Register Frame Specification	Set the frame numbers for data transmission/reception.	–	–
		Auto Refresh	Set the devices for auto refresh.	–	○

1.4 List of Functions

This section shows the list of functions of GX Works2 related to the intelligent function module.
For (Common) indicated in the Reference column, refer to the following manual.
☞GX Works2 Version 1 Operating Manual (Common)

1.4.1 List of functions common to intelligent function module

The following tables show the functions common to operations of the intelligent function module.

Project (common function)			Reference
Intelligent Function Module			–
	New Module	Add new intelligent function module data.	Section 2.1.1
	Delete Module	Delete intelligent function module data.	Section 2.1.5
	Property	Display properties of an intelligent function module data.	Section 2.1.6
	Intelligent Function Module Parameter List	Display a list of set/unset parameters of an intelligent function module.	Section 2.1.7
Print Window		Print the open screen.	(Common)
Print Window Preview		Display the print preview of the open screen.	
Printer Setup		Change the printer settings.	

View (common function)			Reference
Docking Window			–
	Intelligent Function Module Monitor	Display/hide the Intelligent Function Module Monitor window.	Section 2.4
	Intelligent Function Module Monitor 1 to 10		
	Intelligent Function Module Guidance	Display/hide the Intelligent Function Module Guidance window.	Section 3.5.6

Online (common function)			Reference
Read from PLC		Read data from the programmable controller CPU.	(Common)
Write to PLC		Write data to the programmable controller CPU.	
Monitor			–
	Start Monitoring (All Windows)	Start monitoring of all open windows.	(Common)
	Stop Monitoring (All Windows)	Stop monitoring of all open windows.	
	Start Monitoring	Start monitoring of the open window.	
	Stop Monitoring	Stop monitoring of the open window.	
Watch			–
	Start Watching	Start monitoring the current values of registered devices/ labels and intelligent function module.	Section 2.4
	Stop Watching	Stop monitoring the current values of registered devices/ labels and intelligent function module.	

Tool (common function)			Reference
Check Intelligent Function Module Parameter			–
	Check Auto Refresh Duplication	Check the duplication of devices set in the Auto refresh function and displays the result.	Section 2.1.8

1.4.2 List of functions for analog module

The following tables show the functions for analog module.

Edit (analog module)		Reference
Channel Copy	Utilize specified channel data to another channel.	Section 2.1.3
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (analog module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (analog module)			Reference
Intelligent Function Module Tool			–
	Analog Module	–	–
		Offset/Gain Setting	Set an offset/gain of analog module.	Section 3.1.1
		Q61LD Two-Point Calibration Setting	Set a Q61LD two-point calibration.	Section 3.1.2
		Q61LD Default Setting	Configure the Q61LD default setting.	Section 3.1.3
Data Initialization			Initialize the set data of specified channel.	Section 2.1.4

1.4.3 List of functions for temperature input module

The following tables show the functions for temperature input module.

Edit (temperature input module)		Reference
Channel Copy	Utilize specified channel data to another channel.	Section 2.1.3
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (temperature input module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (temperature input module)			Reference
Intelligent Function Module Tool			–
	Temperature Input Module	–	–
		Offset/Gain Setting	Set an offset/gain of temperature input module.	Section 3.2.1
Data Initialization			Initialize the set data of specified channel.	Section 2.1.4

1.4.4 List of functions for temperature control module

The following tables show the functions for temperature control module.

Edit (temperature control module)		Reference
Channel Copy	Utilize specified channel data to another channel.	Section 2.1.3
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (temperature control module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (temperature control module)			Reference
Intelligent Function Module Tool			–
	Temperature Control Module	–	–
		Auto Tuning	Execute the Auto tuning function of temperature control module.	Section 3.3.1
		Sensor Correction	Execute the Sensor Correction function of the temperature control module.	Section 3.3.2
Data Initialization			Initialize the set data of specified channel.	Section 2.1.4

1.4.5 List of functions for counter module

The following tables show the functions for counter module.

Edit (counter module)		Reference
Channel Copy	Utilize specified channel data to another channel.	Section 2.1.3
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (counter module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (counter module)			Reference
Intelligent Function Module Tool			–
	Counter Module	–	–
		Preset	Execute the Preset function of counter module.	Section 3.4.1
Data Initialization			Initialize the set data of specified channel.	Section 2.1.4

1.4.6 List of functions for QD75/LD75 positioning module

The following tables show the functions for QD75/LD75 positioning module.

Project (QD75/LD75 positioning module)			Reference
Intelligent Function Module			–
	Save the Positioning Module Data	Save data of the positioning module selected on the Project view to a file.	Section 3.5.7
	Read from the Positioning Module Data	Read data from the positioning module and reflect it to the positioning module selected on the Project view.	
Open Other Data			–
	Import GX Configurator-QP Data	Read the data created with GX Configurator-QP, and add a new positioning module.	Section 3.5.8

Edit for Parameter (QD75/LD75 positioning module)		Reference
Set Maximum Value	Set the maximum value to the specified parameter item.	Section 3.5.6
Set Minimum Value	Set the minimum value to the specified parameter item.	
Set Default Value	Set the default to the specified parameter item.	
Computation of Electronic Gear	Calculate the electronic gear from the data set on the parameter screen.	
Axis Copy	Utilize the specified axis data to another axis.	Section 2.1.3

Edit for Servo Parameter (QD75/LD75 positioning module)		Reference
Set Maximum Value	Set the maximum value to the specified servo parameter item.	Section 3.5.6
Set Minimum Value	Set the minimum value to the specified servo parameter item.	
Set Default Value	Set the default to the specified servo parameter item.	
Axis Copy	Utilize the specified axis data to another axis.	Section 2.1.3

Edit for Positioning Data (QD75/LD75 positioning module)		Reference
Select All	Select all items.	Section 3.5.6
Jump	Jump to the specified positioning data number.	
Initialization of Row	Initialize the row at the cursor position.	
Initialization of Column	Initialize the column at the cursor position.	
Insert Row	Add a row above the cursor position.	
Delete Row	Delete a row at the cursor position.	
Positioning Data Copy	Copy the data in the row at the cursor position.	
Positioning Data Paste	Paste the data to the row at the cursor position.	
Axis Copy	Utilize specified axis data to another axis.	Section 2.1.3
M Code Comment Edit	Edit the M code comment.	Section 3.5.6
Condition Data Edit	Edit the condition data.	

Edit for Block Starting (QD75/LD75 positioning module)		Reference
Select All	Select all items.	Section 3.5.6
Jump	Jump to the specified positioning data number.	
Initialization of Row	Initialize the row at the cursor position.	
Initialization of Column	Initialize the column at the cursor position.	
Insert Row	Add a row above the cursor position.	
Delete Row	Delete a row at the cursor position.	
Axis Copy	Utilize specified axis data to another axis.	Section 2.1.3
Block Start Copy	Utilize specified block start data to another block start data.	Section 3.5.6
Condition Data Edit	Edit the condition data.	

Edit for Auto Refresh (QD75/LD75 positioning module)		Reference
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (QD75/LD75 positioning module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (QD75/LD75 positioning module)			Reference
Intelligent Function Module Tool			–
	QD75/LD75 Positioning Module	–	–
		Positioning Monitor	Execute the positioning monitor.	Section 3.5.1
		Positioning Test	Execute the positioning test.	Section 3.5.2
		Wave Trace	Execute the wave trace.	Section 3.5.3
		Location Trace	Execute the location trace.	Section 3.5.4
Data Initialization			Initialize the set data of specified axis.	Section 2.1.4
Request of Parameter Initialization/Flash ROM Write Request			Request a command to write buffer memory data of QD75/LD75 positioning module to the flash ROM.	Section 3.5.5
Offline Simulation			Simulate the waveform and location of set positioning data offline.	Section 3.5.6
Automatic Command Speed Calculation			Calculate the constant speed of traveling time between the start position and the target position.	
Automatic Sub Arc Calculation			Calculate the positioning data of circular interpolation control to form a smooth arc (curve line) from the angle position created by two continuous linear interpolation controls.	

1.4.7 List of functions for QD70 positioning module

The following tables show the functions for QD70 positioning module.

Edit (QD70 positioning module)		Reference
Initialization of Row	Initialize the row at the cursor position.	Section 3.5.6
Initialization of Column	Initialize the column at the cursor position.	
Axis Copy	Utilize specified axis data to another axis.	Section 2.1.3
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (QD70 positioning module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (QD70 positioning module)		Reference
Data Initialization	Initialize the set data of specified axis.	Section 2.1.4

1.4.8 List of functions for simple motion module

The following tables show the functions for simple motion module.

Edit (simple motion module)		Reference
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (simple motion module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of auto refresh data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of auto refresh data table.	

Tool (simple motion module)		Reference
Data Initialization	Initialize the auto refresh data of specified axis.	Section 2.1.4

1.4.9 List of functions for serial communication/modem interface module

The following tables show the functions for serial communication/modem interface module.

Edit (serial communication/modem interface module)		Reference
Channel Copy	Utilize specified channel data to another channel.	Section 2.1.3
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (serial communication/modem interface module)		Reference
String/Hexadecimal Switch Format	Switch between the string display and the hexadecimal display on the User Register Frame Content screen.	Section 2.1.2
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (serial communication/modem interface module)			Reference
Intelligent Function Module Tool			–
	Serial Communication Module	–	–
		Circuit Trace	Execute the circuit trace.	Section 3.7.2
		Predefined Protocol Support Function	Start the predefined protocol support function.	Chapter 4
Data Initialization			Initialize the set data of specified channel.	Section 2.1.4
Flash ROM Operation			Execute the flash ROM write permission/protection, module initialization, and flash ROM write command of serial communication module.	Section 3.7.4

1.4.10 List of functions for AS-i master module

The following tables show the functions for AS-i master module.

Edit (AS-i master module)		Reference
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (AS-i master module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (AS-i master module)		Reference
Data Initialization	Initialize the set data of specified channel.	Section 2.1.4

1.4.11 List of functions for FL-net (OPCN-2) interface module

The following tables show the functions for FL-net (OPCN-2) interface module.

Edit (FL-net (OPCN-2) interface module)		Reference
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (FL-net (OPCN-2) interface module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (FL-net (OPCN-2) interface module)		Reference
Data Initialization	Initialize the set data of specified channel.	Section 2.1.4

1.4.12 List of functions for MODBUS® interface module

The following tables show the functions for MODBUS® interface module.

Edit (MODBUS® interface module)		Reference
Auto Device Assignment	Assign sequential devices to the items selected for auto refresh.	Section 2.1.2

View (MODBUS® interface module)		Reference
Automatic Adjustment for Height	Automatically adjust the height of intelligent function module data table.	Section 2.1.2
Automatic Adjustment for Width	Automatically adjust the width of intelligent function module data table.	

Tool (MODBUS® interface module)		Reference
Data Initialization	Initialize the specified set data.	Section 2.1.4

MEMO

2 COMMON OPERATIONS FOR INTELLIGENT FUNCTION MODULES

This chapter explains common operations for the intelligent function modules, such as adding a new project, setting the parameters, and etc.

2.1 Operations of Intelligent Function Module Data 2-2
2.2 Utilizing Sample Comments of Intelligent Function Module 2-21
2.3 Writing/Reading Intelligent Function Module Data 2-21
2.4 Monitoring Intelligent Function Modules 2-22

2.1 Operations of Intelligent Function Module Data

This section explains how to set the intelligent function module data.
Adding an intelligent function module to a project, the data settings (parameter and switch settings) of the intelligent function module become available.

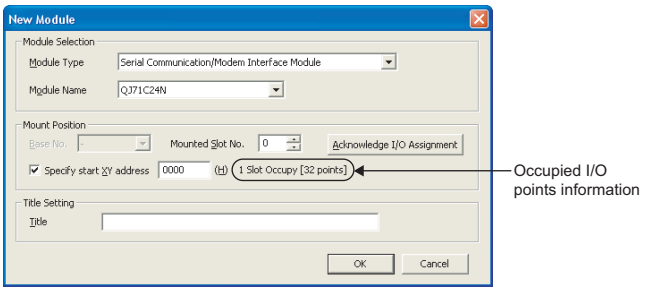
2.1.1 Adding intelligent function module data

Add the intelligent function module data to the project being edited.
The installation slot number and start XY address of the added intelligent function module are reflected to the I/O assignment setting of the PLC parameter.

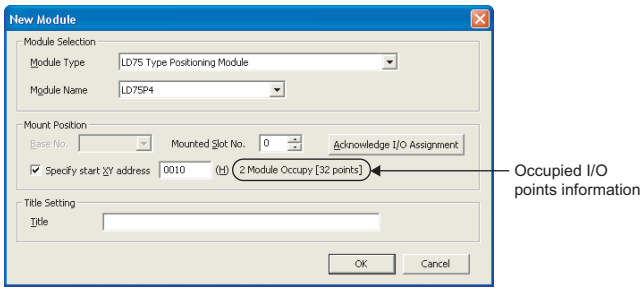
Screen display

Select [Project] ⇒ [Intelligent Function Module] ⇒ [Add New Module].

< QCPU (Q mode) >



< LCPU >



Operating procedure

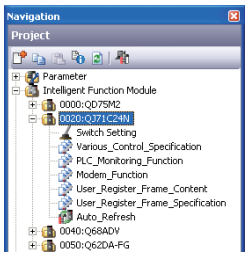
1. Set the items on the screen.

Item		Description
Module Selection		–
	Module Type	Select the type of the intelligent function module to be added.
	Module Name	Select the model of the intelligent function module to be added.
Mount Position		–
	Base No.*1	Specify the base number where the intelligent function module is mounted.
	Mounted Slot No.	Set the slot number of the intelligent function module.
	Specify start XY address	Set the start XY address of the intelligent function module.
	Occupied I/O points information	For QCPU (Q mode), displays the number of occupied slots and the number of occupied I/O points of the module selected for "Module Name". For LCPU, displays the number of logically-occupied modules and the number of occupied I/O points of the module selected for "Module Name".
Title Setting		–
	Title	Set the title. (The number of applicable characters is 32)

*1 : QCPU (Q mode) only

2. **Click the [OK] button.**

The specified intelligent function module data are added to the Project view.



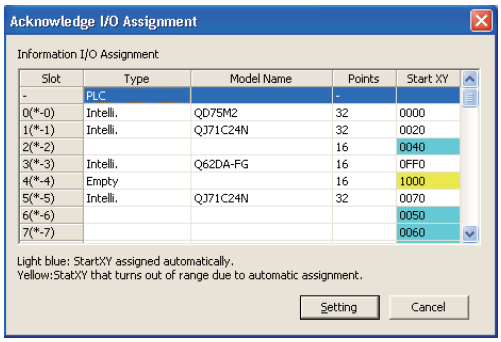
Screen button

● [Acknowledge I/O Assignment]

Displays the Acknowledge I/O Assignment screen. On the Acknowledge I/O Assignment screen, the current I/O assignment settings can be checked. The mounting position for the intelligent function module to be added can also be set.
The following explains how to set the mounting position.

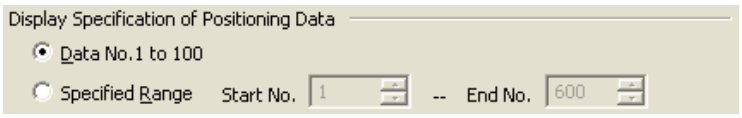
Operation

1. Select the line of the mounting position for the intelligent function module to be added.
2. Click the [Setting] button.
   The selected mounting position is set on the New Module screen.

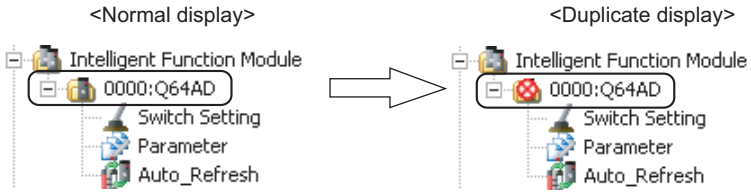


Point

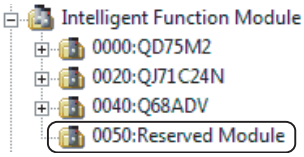
- **Switch setting**
  The switch setting of the intelligent function module is reflected to the "Switch Setting" on the <<I/O Assignment>> tab of the PLC parameter.
- **Changing the positioning data display range**
  The display range of the positioning data can be changed by the following setting.
  Select [Tool] ⇒ [Options] ⇒ "Intelligent Function Module" ⇒ "QD75/LD75 Type Positioning", and make settings for "Display Specification of Positioning Data".



  If the display range is enlarged by setting "Display specification of positioning data", it takes longer time to display the positioning data editing window.
  When positioning data No.101 and above are not necessary, select "Data No.1 to 100".
- **Display when mismatches of data assignment exist between PLC parameters and intelligent function module data**
  When mismatches of data assignment exist between the I/O assignment setting of the PLC parameter and the intelligent function module data, the icon in the Project view is displayed as shown below.



- **Opening project data which contain modules not supported by this version**
  When project data which contain an intelligent function module not supported by this version are opened, "Reserved Module" is displayed in the tree of the Project view.
  It cannot be edited, displayed, or printed, however, it can be saved in the project. In addition, its intelligent function module parameters can be written to the programmable controller CPU.
  (Example of display in the Project view)

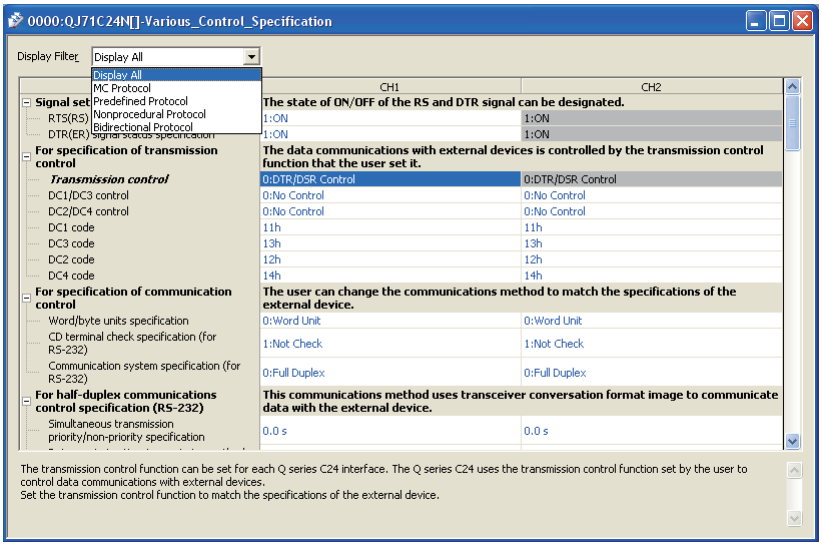


2.1.2 Setting intelligent function module data

Edit the intelligent function module data.

Screen display

Select Project view ⇒ "Intelligent Function Module" ⇒ "(module)" ⇒ "(intelligent function module data)".
The screen image below is an example when the data of QJ71C24N is selected.



Operating procedure

- Set the items on the screen.

  For details of the setting items, refer to the manuals of each intelligent function module.
  - Detailed explanation of a setting item is displayed at the bottom of the screen when it is selected. For LD75 positioning module, a detailed explanation is displayed on the Intelligent Function Module Guidance window. (☞ Section 3.5.6)
  - For a multiple-choice item, the available choices can be displayed in a combo box by double-clicking the cell.
  - For a text input item, the cell becomes editable by double-clicking it.
  - "Display Filter" filters the settings so that only those related to the selected item are displayed.
  - For Q64TCTTN/Q64TCTTBWN/Q64TCRTN/Q64TCRTBWN/L60TCTT4/L60TCTT4BW/ L60TCRT4/L60TCRT4BW, "Control Mode" set on the Switch Setting is displayed.

    Click the Clear Value for Gray Cells button to set the unnecessary items for the mode set on the Switch Setting to '0'.

Point

- Adjusting height/width of data table when characters are illegible
  Height and width of cells can be adjusted by selecting [View] ⇒ [Automatic Adjustment for Height]/[Automatic Adjustment for Width].
  The adjusted height and width are saved to the project.

Item	CH1	CH2
For specification of PLC CPU monitoring	Register system setting values to use the PLC CPU monitoring	
Cycle time units	2:(Unit) Min.	2:(Unit) Min.
Cycle time specification	5	5
PLC CPU monitoring	0:Not Use Function	0:Not Use Function
PLC CPU monitoring transmission measure	0:Data Send(Device Data,	0:Data Send(Device Data, PLC Status

[View]
⇒[Automatic Adjustment for Height]

Item	CH1	CH2
For specification of PLC CPU monitoring function	Register system setting values to use the PLC CPU monitoring function.	
Cycle time units specification	2:(Unit) Min.	2:(Unit) Min.
Cycle time specification	5	5
PLC CPU monitoring function specification	0:Not Use Function	0:Not Use Function
PLC CPU monitoring transmission measure specification (for fixed cycle transmission)	0:Data Send(Device Data, PLC Status Information)	0:Data Send(Device Data, PLC Status Information)

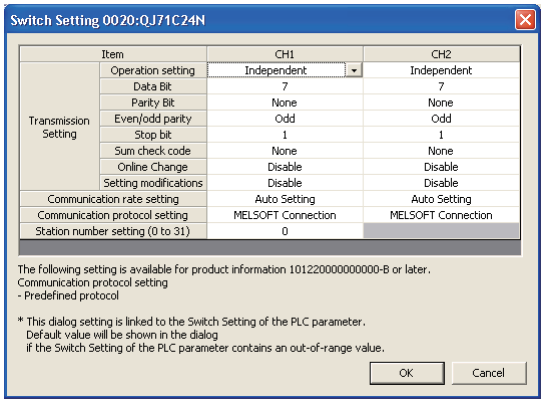
- Switching display on the setting screen of serial communication module.
  The display can be switched to either string or hexadecimal format by selecting [View] ⇒ [String/Hexadecimal Switch Format] on the User Register Frame Content screen.

■ Switch settings

Edit the switch setting of the intelligent function module.

Screen display

Select Project view ⇒ "Intelligent Function Module" ⇒ "(module)" ⇒ "Switch Setting".



Operating procedure

1. Set the items on the screen

For details of the setting items, refer to the manual of each intelligent function module.

- The available choices can be displayed in a combo box by double-clicking the cell.

2. Click the OK button

This setting is applied to the switch setting on the <<I/O Assignment>> tab of the PLC parameter. The switch setting set on the <<I/O Assignment>> tab of the PLC parameter is also applied to this setting.

Point

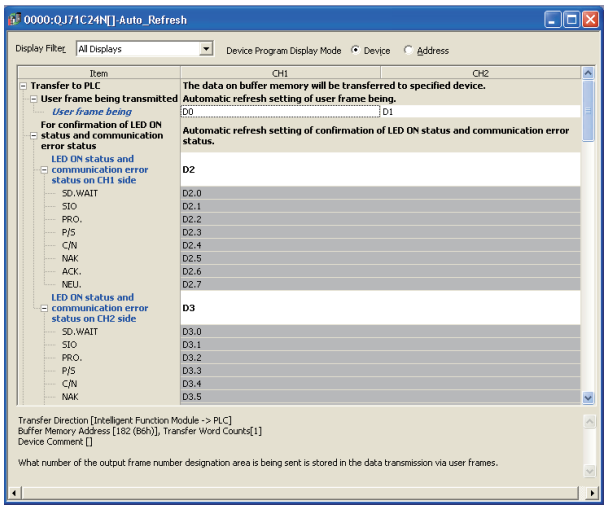
- **Switch setting data not supported by this version**
  To set the switch setting data not supported by this version, do it in the switch setting under <<I/O assignment>> in the PLC parameter.

■ Auto refresh function

Set the auto refresh function of the intelligent function module.

Screen display

Select Project view ⇒ "Intelligent Function Module" ⇒ "(module)" ⇒ "Auto Refresh".

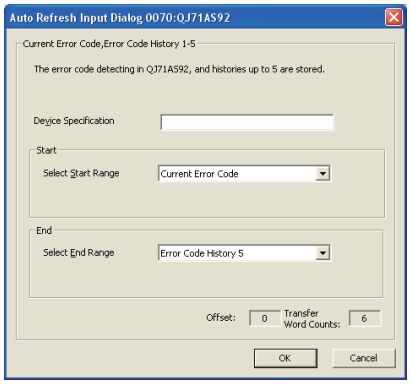


Operating procedure

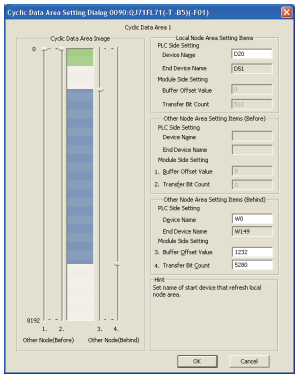
- Setting devices

  For details of the setting items, refer to the manual of each intelligent function module.
  - Detailed explanation of a setting item is displayed at the bottom of the screen when it is selected. For LD75 positioning module, a detailed explanation is displayed on the Intelligent Function Module Guidance window. (☞ Section 3.5.6)
  - For Structured projects, device format and address format can be switched by selecting "Device Program Display Mode".
  - "Display Filter" filters the settings so that only those related to the selected item are displayed.
  - For the items of which the offset values of buffer memory and the transfer word counts can be changed, set the items such as auto refresh devices in another screen.
    Example) Setting screens of AS-i master module and FL-net (OPCN-2) interface module

<AS-i master module>



< FL-net (OPCN-2) interface module >



Point

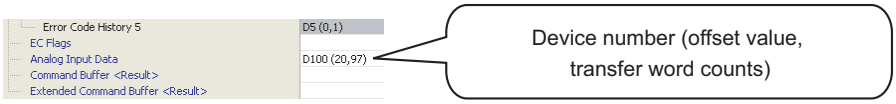
● **Contents displayed in explanation field**

The following shows the contents displayed in the explanation field.

Item		Description
Transfer Direction	Intelligent Function Module → PLC	Transfers the buffer memory data of the intelligent function module to the specified device of the programmable controller CPU.
	PLC → Intelligent Function Module	Transfers the specified device data of the programmable controller CPU to the buffer memory of the intelligent function module.
Buffer Memory Address		Displays the buffer memory address of the item to be auto refreshed.
Offset		Displays the offset value according to the target buffer memory address.
Transfer Word Counts		Displays the transfer word counts of the item to be auto refreshed.
Maximum Transfer Word Counts		Displays the maximum transfer word counts of the item to be auto refreshed.
Device Comment		Displays the device comment that is set to the selected device.

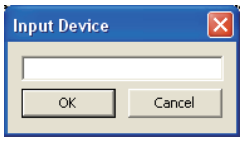
● **Items of which offset values of buffer memory and transfer word counts can be changed**

The set value of the items of which the offset values of buffer memory and the transfer word counts can be changed, is displayed as shown below.



● **Assigning sequential devices for auto refresh**

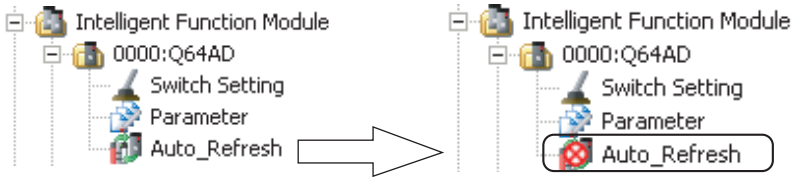
The following screen is displayed by selecting [Edit] ⇒ [Auto Device Assignment] after selecting cells to assign sequential devices. Devices are assigned sequentially from the one specified.



● **Display of the Project view when the devices set in the auto refresh setting are duplicated in the module**

When the screen is closed while the duplicated devices of the auto refresh setting exist, the icon in the Project view is displayed as shown below. To check the device duplications in multiple intelligent function modules, select [Tool] ⇒ [Check Intelligent Function Module Parameter] ⇒ [Check Auto Refresh Duplication].

<Normal display> <Display when duplication occurs>



■ Data setting screen of intelligent function modules

On the data setting screen of an intelligent function module, the setting status is identified by colors as shown below.

Color		Setting status
Text	Background	
Blue	White	Default values
Black	White	Values other than default values
White	Red	Items whose values outside the setting range
Red	White	Items for which device is duplicated in auto refresh setting.
Black	Gray	Items for which setting is not required.
Black	Yellow	Items for which setting (partner axis) is not required at the data number specified for axis to be interpolated. (QD75/LD75 positioning module only)
Green	White	Comments (Positioning module only)
Blue	Gray	Item with the transfer direction of [Intelligent Function Module → PLC]
Green	Gray	Item with the transfer direction of [PLC → Intelligent Function Module]

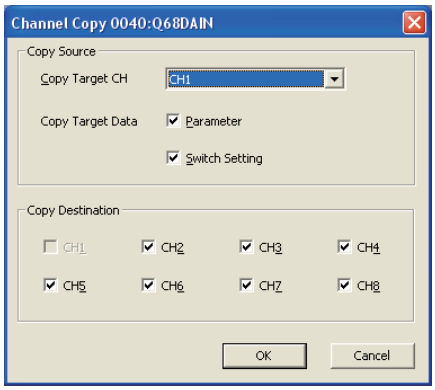
2.1.3 Channel copy/axis copy

Utilize specified channel/axis data to another channel/axis data when setting intelligent function module data.
The Channel copy function is not supported by the Auto refresh function.

Operating procedure

1. **Select [Edit] ⇒ [Channel Copy]/[Axis Copy].**

   The Channel Copy screen is displayed.
   The image below is a screen when the operation is performed on the data of Q68DAIN.



2. **Select the copy target channel/axis and data, and click the OK button.**

   The channel/axis data are copied.

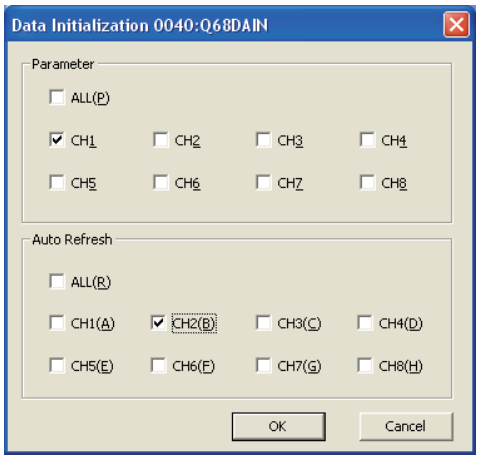
2.1.4 Data initialization

Initialize the set data of intelligent function module.
For LD77MH4, LD77MH16, only the auto refresh data are initialized.

Operating procedure

1. **Select [Tool] ⇒ [Data Initialization].**

   The Data Initialization screen is displayed.
   The image below is a screen when the operation is performed with the data of Q68DAIN.



2. **Select the target channel(s) whose data to be initialized, and click the OK button.**

   The data of selected channel(s) are initialized.

2.1.5 Deleting intelligent function modules

Delete an intelligent function module from the project being edited.

Operating procedure

1. **Select the intelligent function module to be deleted from the Project view.**

2. **Select [Project] ⇒ [Intelligent Function Module] ⇒ [Delete Module].**

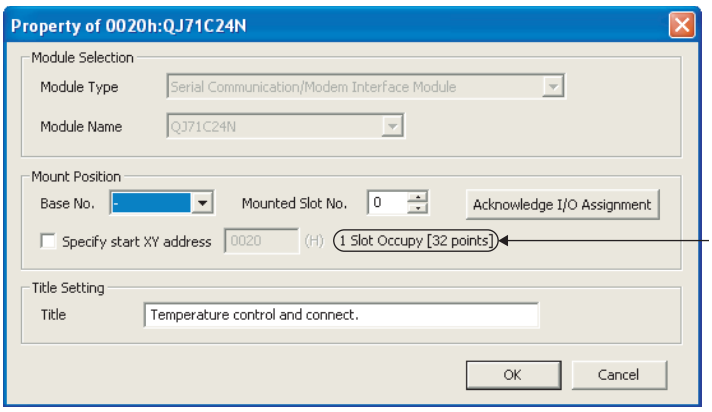
   The selected intelligent function module is deleted.

2.1.6 Displaying properties of intelligent function modules

Check the setting information of an intelligent function module. This operation can also change the installation slot number, start XY address, module name, and title.

Screen display

Select [Project] ⇒ [Intelligent Function Module] ⇒ [Property].



Operating procedure

1. Set the items on the screen.

Item		Description
Module Selection		–
	Module Type	Display the type of the intelligent function module.
	Module Name	Display the model of the intelligent function module.
Mount Position		–
	Base No.*1	Display the base number where the intelligent function module is mounted.
	Mounted Slot No.	Display the current slot number.
	Specify Start XY Address	Display the current start XY address.
	Occupied I/O points information	For QCPU (Q mode), display the number of occupied slots and the number of occupied I/O points of the module selected for "Module Name". For LCPU, display the number of logically-occupied modules and the number of occupied I/O points of the module selected for "Module Name".
Title Setting		–
	Title	Display the current title. (The number of applicable characters is 32)

*1 : QCPU (Q mode) only

2. Click the OK button.

Screen button

For the buttons on the screen, refer to Section 2.1.1.

2.1.7 Checking/changing the number of settable intelligent function module parameters

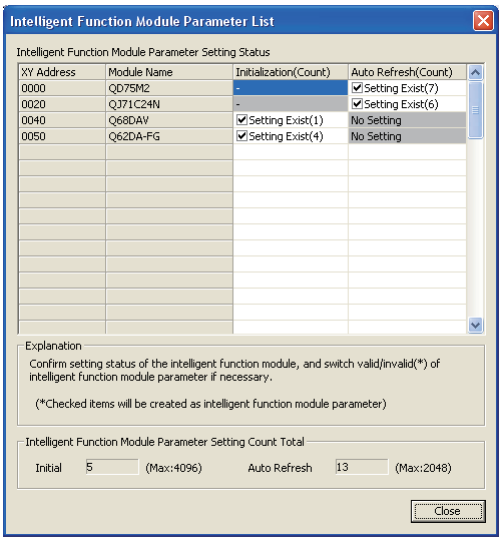
Display a list of the intelligent function module parameters (initial setting/auto refresh) set to the current project.
Set for enabling/disabling initial setting and auto refresh as intelligent function module parameters.

■ Enabling/disabling intelligent function module parameters

Set for enabling/disabling initial setting and auto refresh as intelligent function module parameters.
Since a programmable controller CPU limits the number of parameters that can be set for the mounted intelligent function modules, check the number of settable parameters using this function and switch enabling/disabling for the parameters so that the number of set parameters is within the allowable range.
For the number of settable parameters, refer to the manual of each intelligent function module.

Screen display

Select [Project] ⇒ [Intelligent Function Module] ⇒ [Intelligent Function Module Parameter List].



Operating procedure

1. Set the items on the screen.

Item		Description
XY Address		Display the start XY address of the target intelligent function module.
Module Name		Display the model of the target intelligent function module.
Initialization (Count)		Select whether to enable/disable initial setting. Uncheck the item if it is not set as an intelligent function module parameter. For a module that has no initial setting, "-" is displayed.
Auto Refresh (Count)		Select whether to enable/disable auto refresh. Uncheck the item if it is not set as an intelligent function module parameter. For a module for which auto refresh is not set, "No setting" is displayed.
Intelligent Function Module Parameter Setting Count Total		Display the number of settable intelligent function module parameters.
	Initial	Display the number of initial settings set as intelligent function module parameters.
	Auto Refresh	Display the number of auto refreshes set as intelligent function module parameters.

2. Click the Close button.

Point

● **When the initial setting and the number of auto refresh settings cannot be changed**
In case of the following conditions, the number of initial settings and auto refresh settings can not be changed.
Even when the "Setting Exist" is selected, the display is masked and the check box is not displayed.
- Reserved module
- The access authority for security is in the write-protected mode.

■ Intelligent function module parameters

When the intelligent function module data are set, intelligent function module parameters are created.
The intelligent function module parameters consist of initial setting and auto refresh.
The intelligent function module parameters, when written to a programmable controller CPU, operate as explained below. Write the intelligent function module parameters to the programmable controller CPU using the Write to PLC function. (☞ GX Works2 Version 1 Operating Manual (Common))

● Initial setting

The parameters of the individual intelligent function module data are set as initial setting data. The initial setting data are registered to the programmable controller CPU parameters and automatically written to the intelligent function module when the programmable controller CPU turns to the RUN state.

● Auto refresh

If auto refresh is set to the buffer memory of an intelligent function module, data are write/read automatically to/from the specified devices when the END instruction is executed in the programmable controller CPU.

For the intelligent function module type and the availability of initial setting/auto refresh setting, refer to Section 2.1.1.

■ Number of parameter settings for intelligent function modules

The number of parameter settings for intelligent function modules (initial setting and auto refresh) are limited depending on the programmable controller CPUs or MELSECNET/H Remote I/O modules. In addition, the number of parameter settings are also limited depending on the type of intelligent function modules.
Be sure to set the total number of parameter settings of the intelligent function modules, not exceeding the maximum number of parameter settings of the programmable controller CPUs or MELSECNET/H Remote I/O modules.

● Limit for the number of parameter settings of the programmable controller CPUs or MELSECNET/H Remote I/O modules

The following table shows the number of parameter settings for the initial setting and the auto refresh that can be set on the programmable controller CPUs or MELSECNET/H Remote I/O modules.

Application target of intelligent function module		Maximum number of parameter settings	
		Initial setting	Auto refresh
QCPU (Q mode)	Basic model QCPU, High Performance model QCPU, MELSECNET/H Remote I/O module	512	256
	Q00UJ, Q00U, Q01U, Q02U	2048	1024
	Q03UD, Q03UDE, Q04UDH, Q04UDEH, Q06UDH, Q06UDEH, Q10UDH, Q10UDEH, Q13UDH, Q13UDEH, Q20UDH, Q20UDEH, Q26UDH, Q26UDEH, Q50UDEH, Q100UDEH	4096	2048
LCPU	L02, L02-P	2048	1024
	L26-BT, L26-PBT	4096	2048

● Limit for the number of parameter settings of the intelligent function modules

The following table shows the number of parameter settings for the initial setting and auto refresh that can be set on the intelligent function modules.
'-' in the Initial setting column indicates that the corresponding module does not have the initial setting.

CPU	Module type	Module model	Initial setting (Fixed)	Auto refresh (Maximum number of settings)
QCPU (Q mode)	Analog module	Q64AD	2	13
		Q68ADV	1	25
		Q68ADI	1	25
		Q64AD-GH	5	27
		Q62AD-DGH	9	15
		Q68AD-G	7	36
		Q66AD-DG	11	28
		Q62DAN	1	5
		Q64DAN	1	9
		Q68DAVN	1	17
		Q68DAIN	1	17
		Q62DA	1	5
		Q64DA	1	9
		Q68DAV	1	17
		Q68DAI	1	17
		Q62DA-FG	4	9
		Q66DA-G	5	14
		Q64AD2DA	8	61
		Q61LD	3	14
	Temperature input module	Q64RD	5	18
		Q64RD-G	5	18
		Q64TD	6	13
		Q64TDV-GH	6	13
		Q68TD-G-H02	6	24
		Q68TD-G-H01	6	24
		Q68RD3-G	6	24
	Temperature control module	Q64TCTT	21	61
		Q64TCTTBW	21	73
		Q64TCRT	21	61
		Q64TCRTBW	21	73
		Q64TCTTN	52	103
		Q64TCTTBWN	53	115
		Q64TCRTN	51	103
		Q64TCRTBWN	52	115
		Q62HLC	22	52
	Counter module	QD62	8	14
		QD62D	8	14
		QD62E	8	14
		QD63P6	6	48
		QD64D2	6	16
		QD60P8-G	24	8
		QD65PD2	18	62

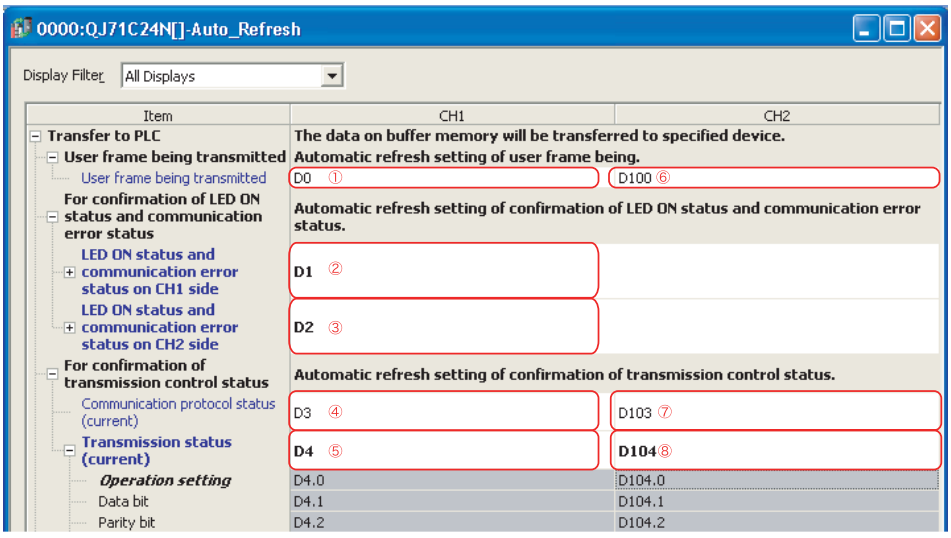
CPU	Module type	Module model	Initial setting (Fixed)	Auto refresh (Maximum number of settings)
QCPU (Q mode)	QD75 positioning module	QD75P1	–	7
		QD75P2	–	14
		QD75P4	–	28
		QD75P1N	–	7
		QD75P2N	–	14
		QD75P4N	–	28
		QD75D1	–	7
		QD75D2	–	14
		QD75D4	–	28
		QD75D1N	–	7
		QD75D2N	–	14
		QD75D4N	–	28
		QD75M1	–	7
		QD75M2	–	14
		QD75M4	–	28
		QD75MH1	–	7
		QD75MH2	–	14
		QD75MH4	–	28
	QD70 positioning module	QD70P4	12	26
		QD70P8	24	50
		QD70D4	16	26
		QD70D8	32	50
		QD72P3C3	12	18
	Serial communication/ Modem interface module	QJ71C24N	–	46
		QJ71C24N-R2	–	47
		QJ71C24N-R4	–	46
		QJ71C24	–	46
		QJ71C24-R2	–	47
	AS-i master module	QJ71AS92	–	30
	FL-net (OPCN-2) interface module	QJ71FL71-F01	2	14
		QJ71FL71-T-F01	2	14
		QJ71FL71-B2-F01	2	14
		QJ71FL71-B5-F01	2	14
		QJ71FL71	2	14
		QJ71FL71-T	2	14
		QJ71FL71-B2	2	14
		QJ71FL71-B5	2	14
	MODBUS® Interface Module	QJ71MT91	3	5
		QJ71MB91	3	5

CPU	Module type	Module model	Initial setting (Fixed)	Auto refresh (Maximum number of settings)
LCPU	Analog module	L60AD4	12	75
		L60DA4	4	11
	Temperature control module	L60TCTT4	43	103
		L60TCTT4BW	43	115
		L60TCRT4	43	103
		L60TCRT4BW	43	115
	Counter module	LD62	8	14
		LD62D	8	14
	LD75 positioning module	LD75P4	–	28
		LD75D4	–	28
	Simple motion module	LD77MH4	–	28
		LD77MH16	–	112
	Serial communication module	LJ71C24	–	50
		LJ71C24-R2	–	51

Point

● **Number of auto refresh settings**

The number of auto refresh settings in which devices are set is counted.
In the following settings, the number of auto refresh settings is 8.

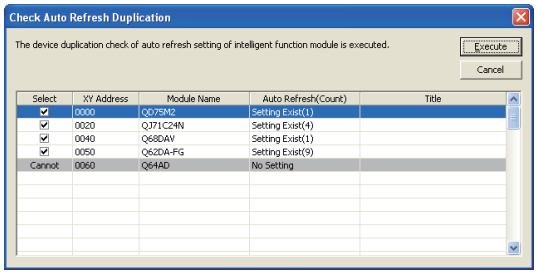


2.1.8 Checking device duplication of auto refresh setting

Check the device duplication of auto refresh settings among intelligent function modules.

Screen display

Select [Tool] ⇒ [Check Intelligent Function Module Parameter] ⇒ [Check Auto Refresh Duplication].

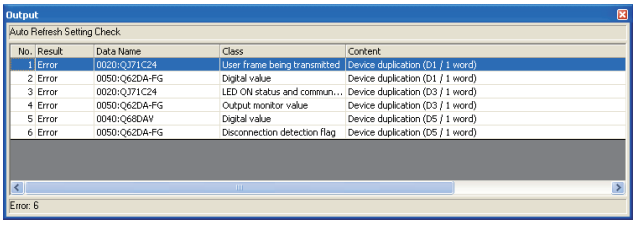


Operating procedure

1. **Select the modules to check the device duplication of auto refresh settings.**

2. **Click the** Execute **button.**

   If device duplication is found, the check result is displayed in the Output window.
   By double-clicking the result, the corresponding error location in the program is displayed.



Point

● **When the device duplication of auto refresh settings can not be checked**
In case of the following conditions, the module is recognized as a module that cannot check the device duplication of auto refresh settings, and "Cannot Select" is displayed.
- No device is set on the Auto Refresh screen.
- Not checked in the intelligent function module parameter list.
- The module start XY address is not set.
- Reserved module
- The access authority for security is in the read-protected mode.

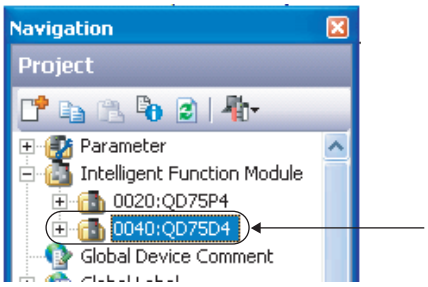
2.1.9 Changing intelligent function module type

The following explains the operating procedure to change intelligent function module type, for instance, from QD75P4 to QD75D4, or from LD75D4 to LD75P4.
The intelligent function module type can be changed by copying and pasting the original data onto the parameter setting screen of the new module data.

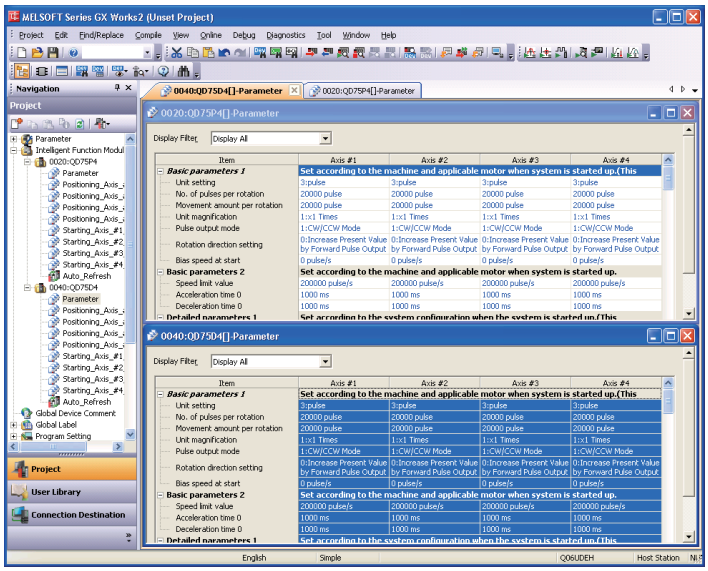
The following operating procedure is the instance when changing the type from QD75P4 to QD75D4.

Operating procedure

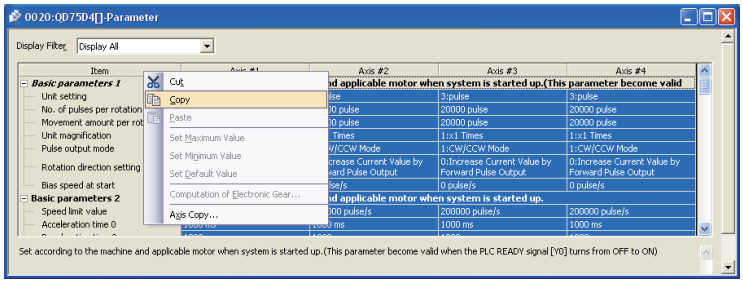
1. **Add new intelligent function module data. (☞ Section 2.1.1)**



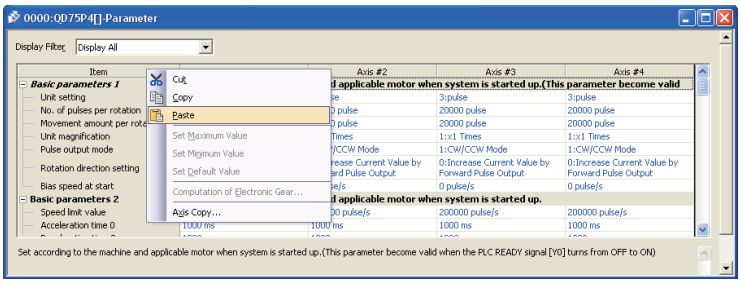
2. **Display both parameter setting screens of the original module and the new module.**



3. **On the parameter setting screen of the original module, right-click the top left cell and select [Copy] from the shortcut menu to copy all data.**



4. **On the parameter setting screen of the new module, right-click the top left cell and select [Paste] from the shortcut menu to paste all data.**



2.2 Utilizing Sample Comments of Intelligent Function Module

Utilize sample comments of intelligent function module devices for device comments.
For details of the operation method, refer to the following manual.

☞ GX Works2 Version 1 Operating Manual (Common)

2.3 Writing/Reading Intelligent Function Module Data

Write the set intelligent function module data to the programmable controller CPU, or the buffer memory and flash ROM of the intelligent function module.
For details of the operation method, refer to the following manual.

☞ GX Works2 Version 1 Operating Manual (Common)

2.4 Monitoring Intelligent Function Modules

This section explains how to monitor input/output signals and buffer memory of an intelligent function module. For QD75/LD75 positioning module, this function is used to debug a program such as ladder. For checking an operation of QD75/LD75 positioning module or debugging, use the positioning monitor.

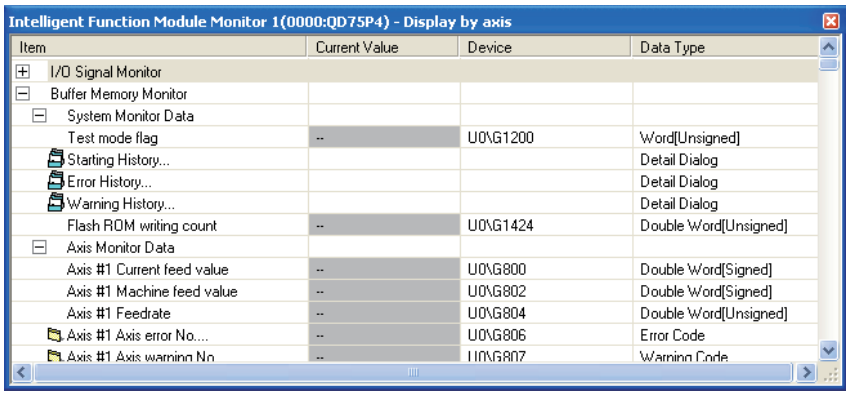
(☞ Section 3.5.1)

2.4.1 Registering and monitoring intelligent function modules

Register and monitor module information of an intelligent function module.

Screen display

Select [View] ⇒ [Docking Window] ⇒ [Intelligent Function Module Monitor] ⇒ [Intelligent Function Module Monitor 1] to [Intelligent Function Module Monitor 10].



Display contents

Item	Description
Item	Display the name of the module information. When "Data Type" is 'Detail Dialog' ( )/'Error Code' or 'Warning Code' ( ), an icon is displayed at the head of each item.
Current value	Display the current value of the module information. Display character strings such as ON/OFF.
Device	Display the device assigned to the module information.
Data Type	Display the data type of the module information. For 'Detail Dialog'/'Error Code'/'Warning Code', details of each item can be confirmed. For details, refer to the Point in this section.

Operating procedure

1. **Register the intelligent function module to be monitored.**

   For the registration method, refer to Section 2.4.2.

2. **Select [Online] ⇒ [Watch] ⇒ [Start Watching].**

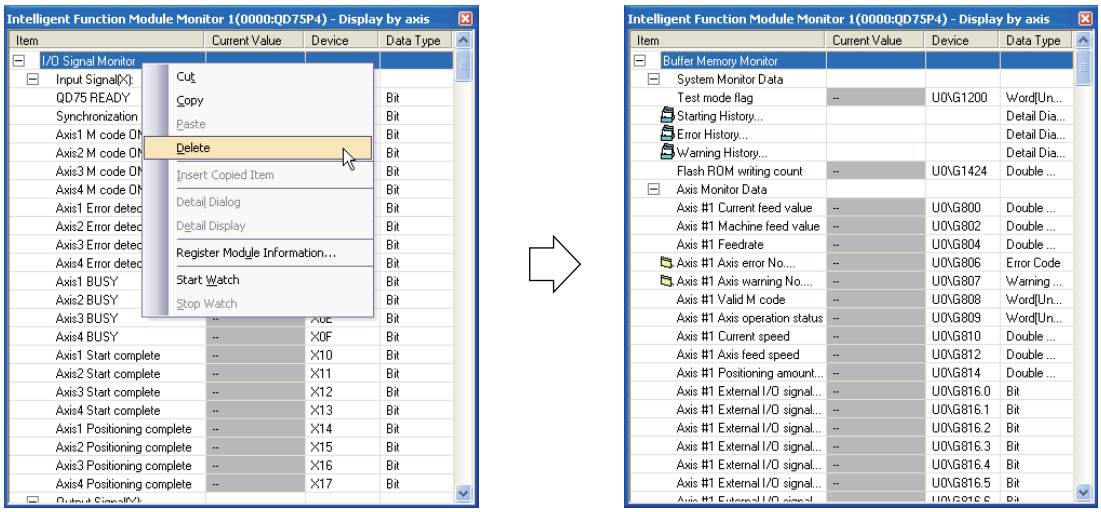
   The current values of the registered intelligent function module are displayed in the window.

■ Customizing monitoring items

The module information registered to the Intelligent Function Module Monitor window can be customized by cutting/copying/pasting/deleting unnecessary items.
The customized settings are saved along with the project.
Note that the operations to 'undo' the customized items cannot be performed.

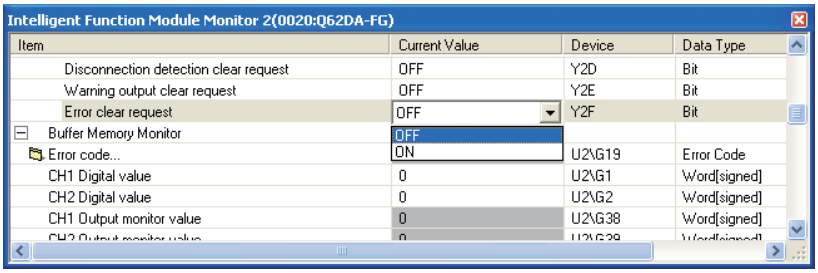
Operating procedure

- Select unnecessary items on the Intelligent Function Module Monitor window, right-click them and select [Cut]/[Copy]/[Paste]/[Delete] from the shortcut menu.



Point

- **Paste**
  The cut/copied items can be pasted in the same project in the same window only.
- **Project created in former version**
  If a project to which the Intelligent Function Module Monitor is registered in GX Works2 Version 1.08J or earlier is opened in GX Works2 Version 1.53F or later, all registered module information is discarded.
- **Changing current value**
  The current value can be changed by directly inputting the desired value in "Current value" area during monitoring. When the current value to be changed is displayed in character strings such as ON/OFF, available choices are shown in a combo box. The current value cannot be changed is displayed in gray background.



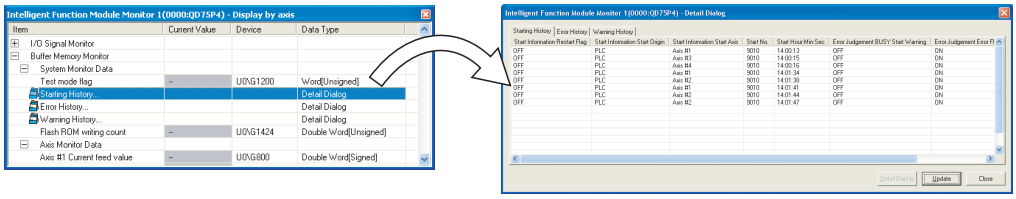
Point

● **Detailed display of history information**

For the analog module, QD75/LD75 type positioning module, and FL-net (OPCN-2) interface module, details of the history information can be displayed during the monitoring.

To display details of the history information, double-click a row in which 'Detail Dialog' is displayed in the "Data Type" column, or right-click it and select [Detail Dialog] from the shortcut menu.

The following shows the Detail Dialog screen for QD75P4.

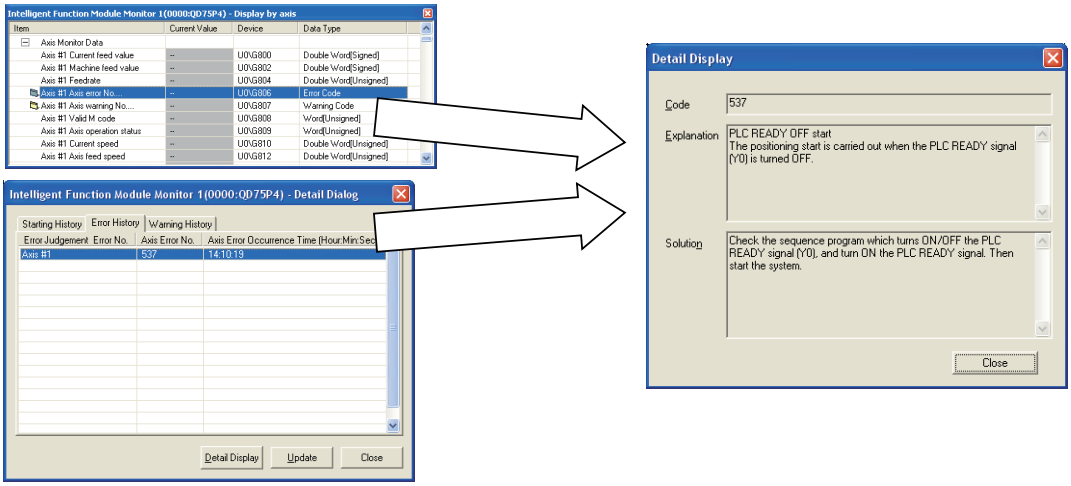


● **Detailed display of error code/warning code**

Details of the error code/warning code can be displayed from the intelligent function module monitor windows or the Detail Dialog.

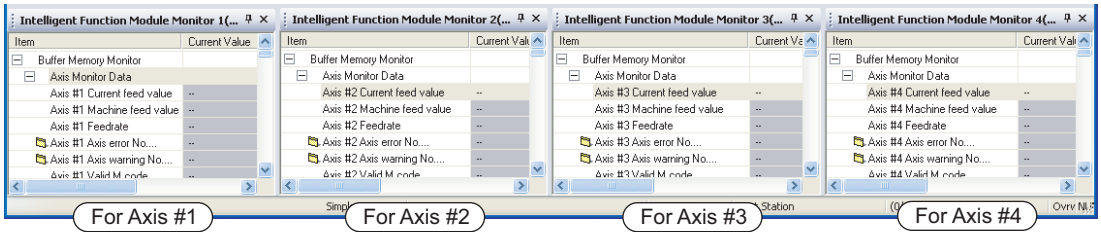
To display details of the error code/warning code, double-click a row in which an error code/warning code is displayed, or right-click it and select [Detail Display] from the shortcut menu.

The following shows the Detail Display screen of error code for QD75P4.



● **Using multiple Intelligent Function Module Monitor windows**

Each axis of positioning module can be monitored by activating multiple Intelligent Function Module Monitor windows and customizing the settings of each window.



2.4.2 Registering intelligent function modules

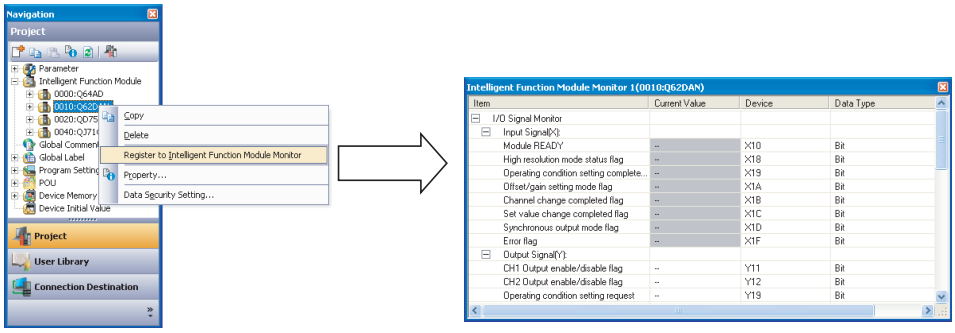
Register an intelligent function module to the Intelligent Function Module Monitor window.

■ Registering intelligent function modules using shortcut menu from Project view

Register an intelligent function module using the shortcut menu from the Project view.

Operation

1. Select a module to be registered to the Intelligent Function Module Monitor window from the Project view.
2. Right-click and select [Register to Intelligent Function Module Monitor] in the shortcut menu.
   The module is registered to the Intelligent Function Module Monitor window.

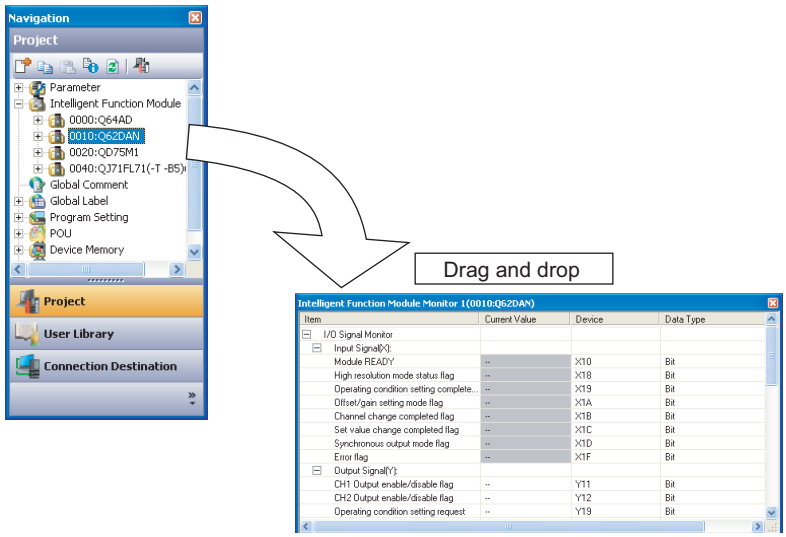


■ Registering intelligent function modules using drag-and-drop operation

Register an intelligent function module using the drag-and-drop operation from the Project view.

Operation

1. Select a module to be registered from the Project view.
2. Drag and drop it to the Intelligent Function Module Monitor window.
   The module is registered.

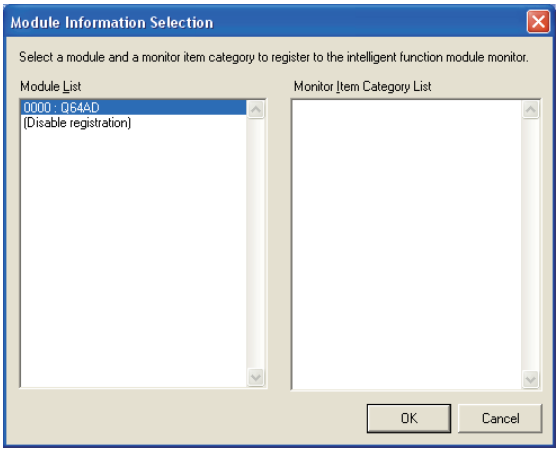


■ Registering intelligent function modules using shortcut menu from Intelligent Function Module Monitor window

Register an intelligent function module using the shortcut menu from the Intelligent Function Module Monitor screen.

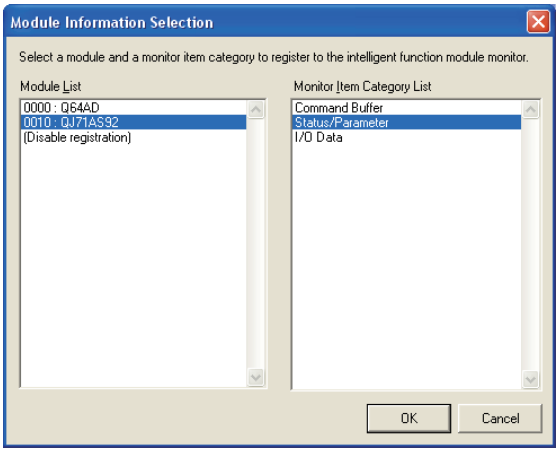
Operation

1. Right-click on the Intelligent Function Module Monitor window and select [Register Module Information] from the shortcut menu.
   The Module Information Selection screen is displayed.



2. Select a module to be registered from "Module List" and click the OK button.
   The module is registered to the Intelligent Function Module Monitor window.

   When selecting the positioning module, AS-i master module, or FL-net (OPCN-2) interface module in "Module List", select an item displayed in "Monitor Item Category List".
   Example) AS-i master module



Point

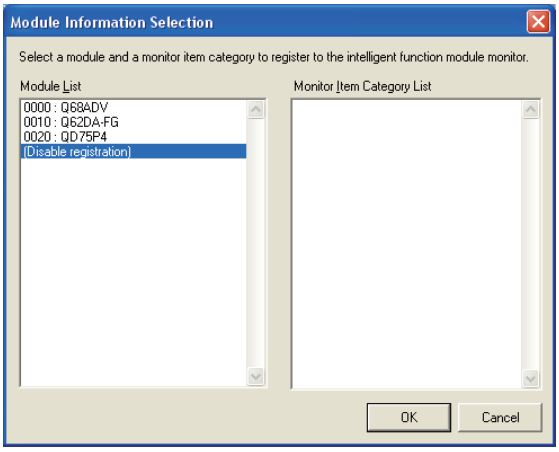
- **Customizing monitoring items**
  The registered intelligent function module information can be customized by right-clicking the desired module information on the Intelligent Function Module Monitor window and selecting [Cut]/[Copy]/[Paste]/[Delete] in the shortcut menu. (Section 2.4.1)
- **Copying module information**
  Module information can be copied by right-clicking a desired module information and selecting [Copy] from the shortcut menu on the Intelligent Function Module Monitor window, and pasted to text files etc.

2.4.3 Canceling registration of intelligent function modules

Cancel the registration of the module information which is registered to the intelligent function module monitor.

Operation

1. On the Intelligent Function Module Monitor window to be canceled, right-click and select [Register Module Information] in the shortcut menu.
   The Module Information Selection screen is displayed.



2. Select "(Disable registration)" and click the OK button.
   The registration of the module is canceled.

MEMO

3 OPERATING INTELLIGENT FUNCTION MODULES

This chapter explains operations of the intelligent function module tools.

3.1 Analog Module 3-2
3.2 Temperature Input Module 3-8
3.3 Temperature Control Module 3-10
3.4 Counter Module 3-14
3.5 QD75/LD75 Positioning Module 3-16
3.6 Simple Motion Module 3-48
3.7 Serial Communication/Modem Interface Module 3-49

3.1 Analog Module

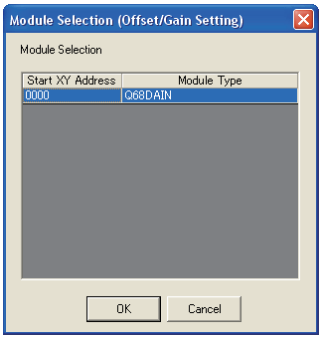
This section explains the operations of the intelligent function module tools related to the analog module.

3.1.1 Offset and gain settings

Perform the offset/gain settings of the analog module.
For details of offset/gain settings, refer to the user's manual of the module to be used.

Operating procedure

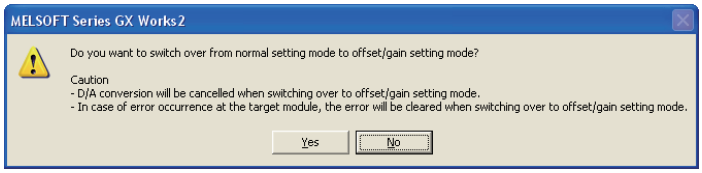
1. **Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [Analog Module] ⇒ [Offset/Gain Setting] ( ).**
   The Module Selection (Offset/Gain Setting) screen is displayed.



2. **Select a module and click the OK button.**
   The Offset/Gain Setting screen is displayed.
   The operations of offset and gain settings of analog modules differ between A/D converter module and D/A converter module.
   ☞ ■ Settings on A/D converter module
   ☞ ■ Settings on D/A converter module

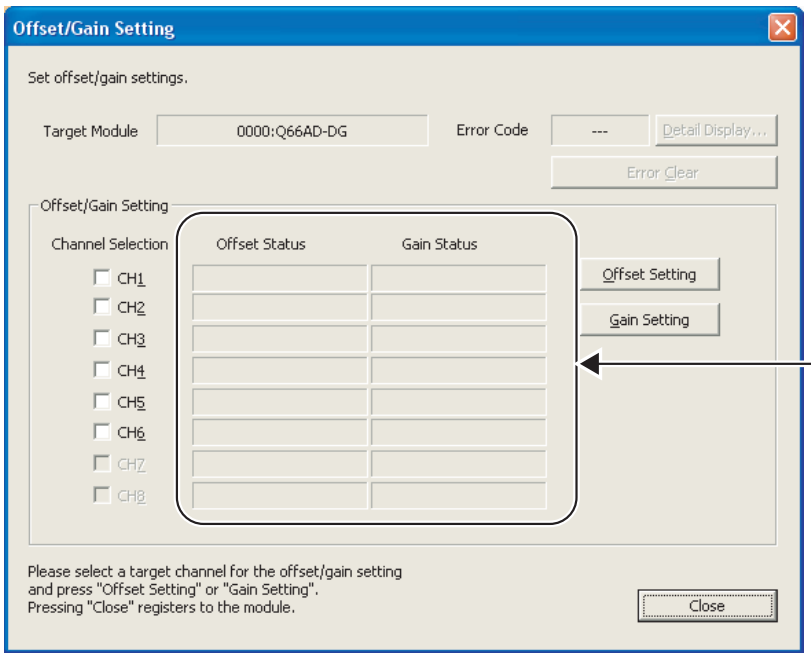
Point

● **Module operation mode**
When the offset/gain settings are performed, the following operation mode transition confirmation message is displayed according to the module's function version.
If the message is not displayed, the module operation mode needs to be set to the offset/gain setting mode by the switch setting of intelligent function module.
For details, refer to the user's manual of the module to be used.



■ Settings on A/D converter module

The following explains the operation of offset/gain settings using Q68AD-G as an example.



Operating procedure

1. **Check the offset/gain setting target channel(s) under "Channel Selection".**

2. **Apply an electric current or voltage to the module.**

3. **Click the** Offset Setting **or** Gain Setting **button.**

   The Offset Setting button sets the analog value which is input to the specified channel as an offset value.

   The Gain Setting button performs the gain setting to the specified channel.
   When the settings are completed normally, "Changed" is displayed in the 'Offset/Gain status' fields.
   When an error occurs, an error code is displayed at "Error Code".

4. **Click the** Close **button.**

   The offset values and gain values are registered to the module.

Screen button

- Detail Display...

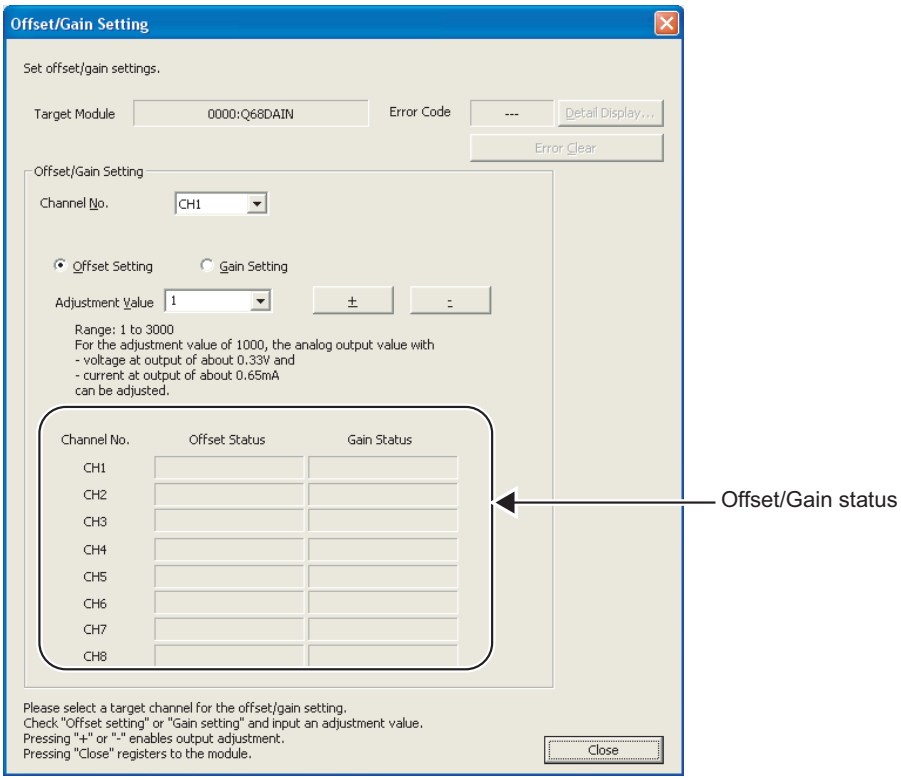
  Displays the error contents and the corrective action for the displayed error code.

- Error Clear

  Clears the error.

■ Settings on D/A converter module

The following explains the operation of offset/gain settings using Q68DAIN as an example.



Operating procedure

1. **Select the channel number and select either "Offset Setting" or "Gain Setting".**

2. **Select or enter a value for "Adjustment Value".**

3. **Click the [±] or [-] button.**

   The offset/gain values increase or decrease for the amount set as an adjustment value.
   When the settings are completed normally, "Changed" is displayed in the 'Offset/Gain status' fields.
   When an error occurs, an error code is displayed at "Error Code".

4. **Click the [Close] button.**

   The offset values and gain values are registered to the module.

Screen button

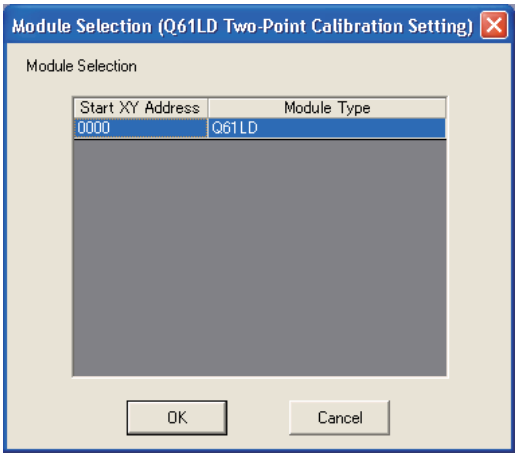
For the screen buttons, refer to ■ Settings on A/D converter module.

3.1.2 Q61LD two-point calibration

Perform the two-point calibration to use Q61LD as a measuring device.
For the detailed settings, refer to the user's manual of the module to be used.

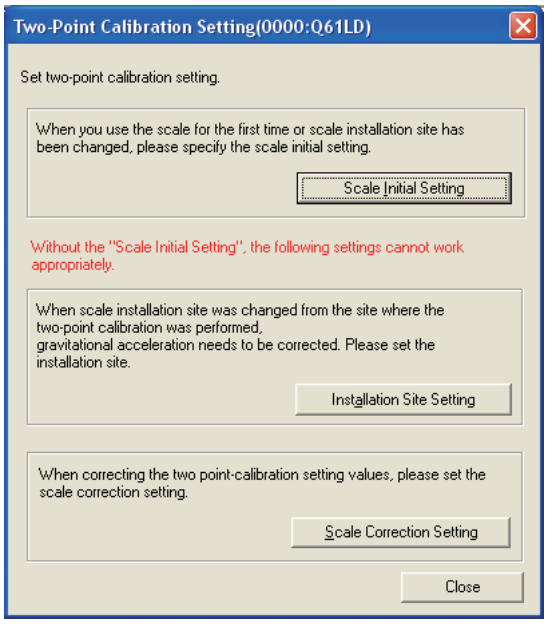
1. **Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [Analog Module] ⇒ [Q61LD Two-Point Calibration Setting].**

   The Module Selection (Q61LD Two-Point Calibration Setting) screen is displayed.



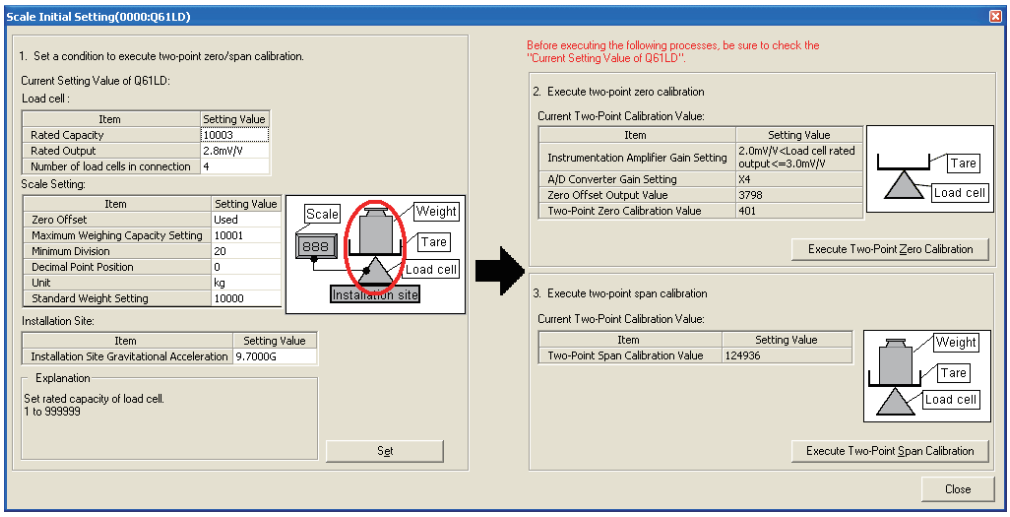
2. **Select a module and click the OK button.**

   The Two-Point Calibration Setting screen is displayed.



3. **Click the** Scale Initial Setting **button.**

The Scale Initial Setting screen is displayed.



4. **Set the conditions on the left side of the screen, and click the** Set **button.**

The settings are written to the module.

5. **Click the** Execute Two-Point Zero Calibration **button.**

The two-point zero calibration is performed.

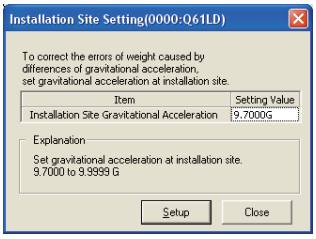
6. **Click the** Execute Two-Point Span Calibration **button.**

The two-point span calibration is performed.

Screen button

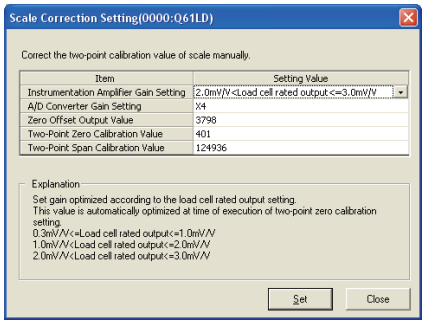
- Installation Site Setting

Opens the screen to set the installation site gravitational acceleration.



- Scale Correction Setting

Opens the screen to correct the two-point calibration value of the scale.

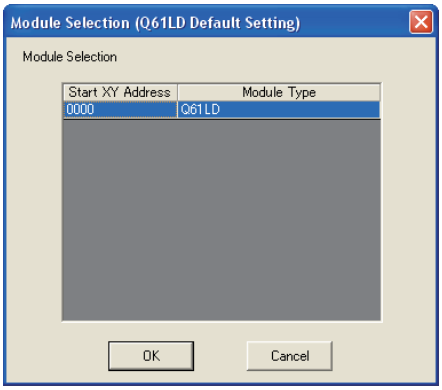


3.1.3 Q61LD default settings

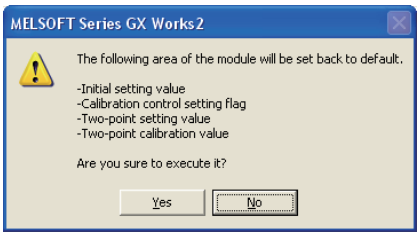
Batch restore the Q61LD parameters to the factory default settings when the setting of module is incorrect, an error occurs, or using in another system.
For details of such as setting items, refer to the user's manual of the module.

Operating procedure

1. **Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [Analog Module] ⇒ [Q61LD Default Setting].**
   The Module Selection (Q61LD Default Setting) screen is displayed.



2. **Select a module, and then click the OK button.**
   The following message is displayed.



3. **Click the Yes button.**
   The default settings are written to Q61LD.

3.2 Temperature Input Module

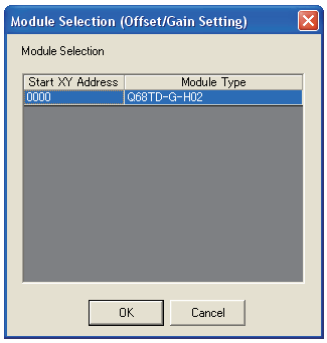
This section explains the operations of the intelligent function module tools related to the temperature input module.

3.2.1 Offset and gain settings

Perform the offset/gain settings of the temperature input module.
For details of offset/gain settings, refer to the user's manual of the module to be used.

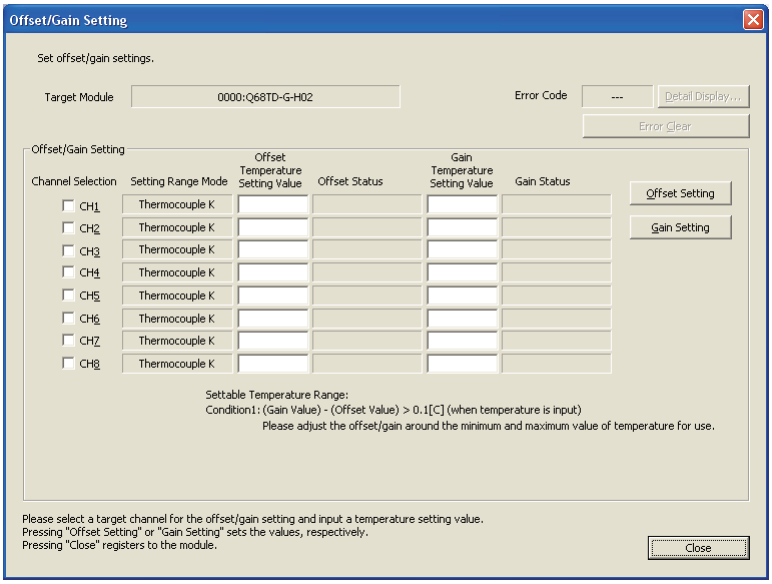
Operating procedure

1. **Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [Temperature Input Module] ⇒ [Offset/Gain Setting] ( ).**
   The Module Selection (Offset/Gain Setting) screen is displayed.



2. **Select a module and click the OK button.**
   The Offset/Gain Setting screen is displayed.

   The following explains the operation of offset/gain settings using Q68TD-G-H02 as an example.



3. **Check the offset/gain setting target channel(s) under "Channel Selection".**

4. **Set an offset value or a gain value on the thermocouple or the standard direct current voltage generator for the channel whose offset/gain setting to be adjusted.**

5. **Enter values to "Offset Temperature Setting Value" or "Gain Temperature Setting Value".**

6. **Click the** Offset Setting **or** Gain Setting **button.**

   The Offset Setting button sets the analog value which is input to the specified channel as an offset value.

   The Gain Setting button performs the gain setting to the specified channel.
   When the settings are completed normally, "Changed" is displayed in the "Offset Status" or "Gain Status" fields.
   When an error occurs, an error code is displayed at "Error Code".

7. **Click the** Close **button.**

   The offset values and gain values are registered to the module.

3.3 Temperature Control Module

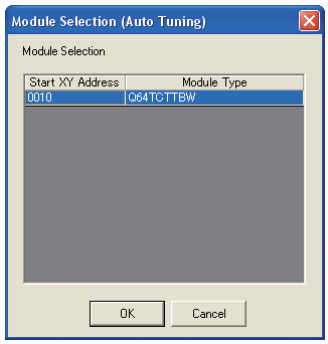
This section explains the operations of the intelligent function module tools related to the temperature control module.

3.3.1 Automatic tuning

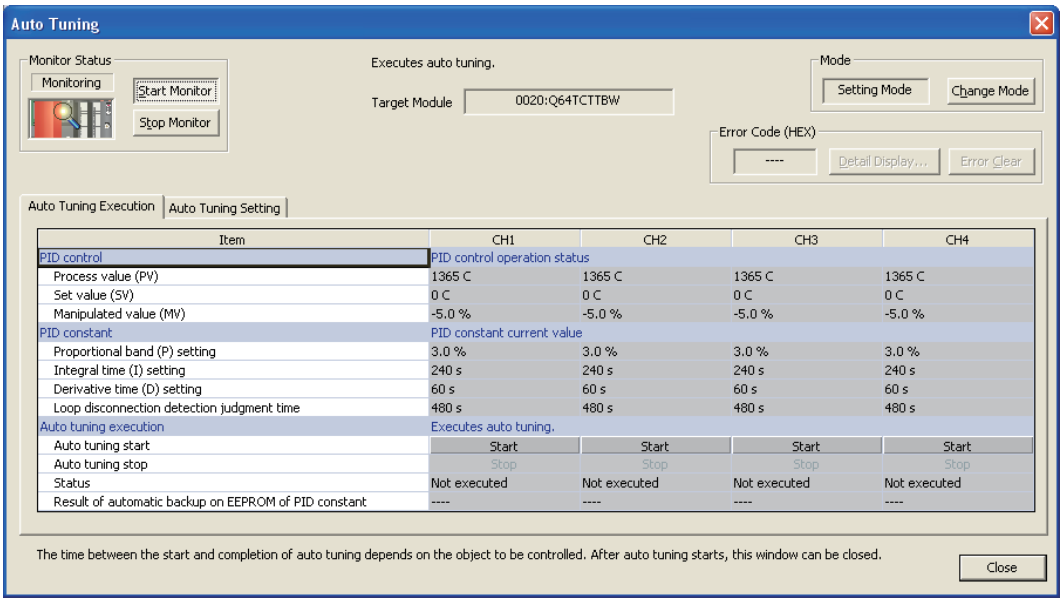
Perform the automatic tuning of the temperature control module.
For details of automatic tuning, refer to the user's manual of the module to be used.

Operating procedure

1. **Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [Temperature Control Module] ⇒ [Auto Tuning].**
   The Module Selection (Auto Tuning) screen is displayed.



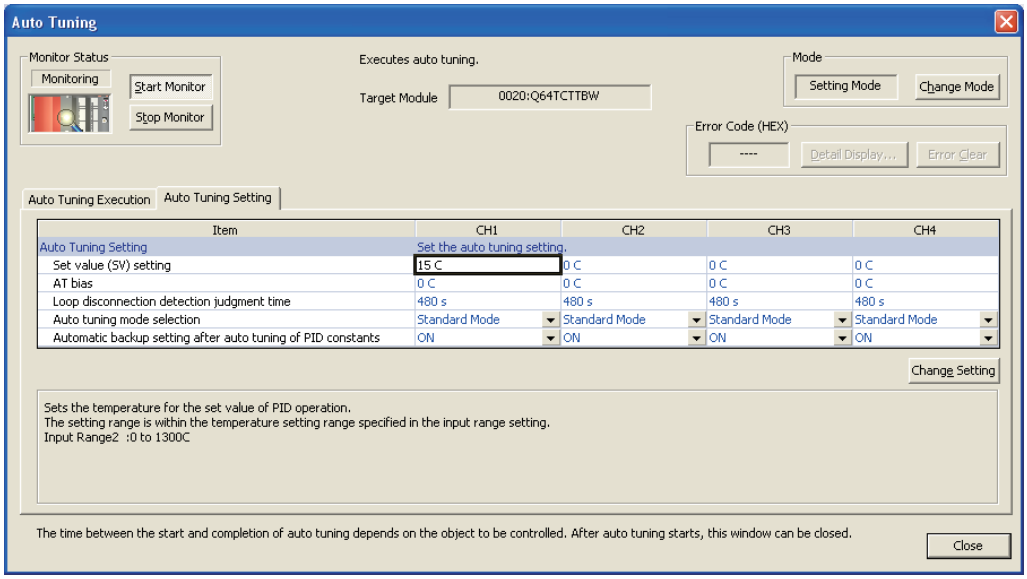
2. **Select a module and click the OK button.**
   The Auto Tuning screen is displayed.



3. **When "Mode" is set to "Setting Mode", click the [Change Mode] button.**

   The operation mode of the temperature control function is changed to "Operation Mode".

4. **Select the <<Auto Tuning Setting>> Tab.**



5. **Configure the automatic tuning settings.**

   For details of the setting items, refer to the user's manual of the module to be used.

6. **Click the [Change Setting] button.**

   The set values are written to the buffer memory of the module.

7. **Select the <<Auto Tuning Execution>> tab.**

8. **Click the [Start] button.**

   The automatic tuning is started.

Screen button

For the screen buttons, refer to Section 3.1.1.

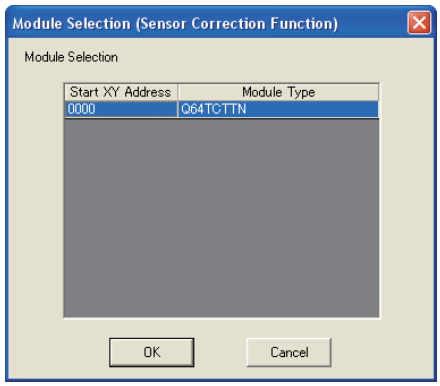
3.3.2 Sensor correction

Perform the sensor correction of temperature control module.
For details of sensor correction, refer to the user's manual of the module to be used.

Operating procedure

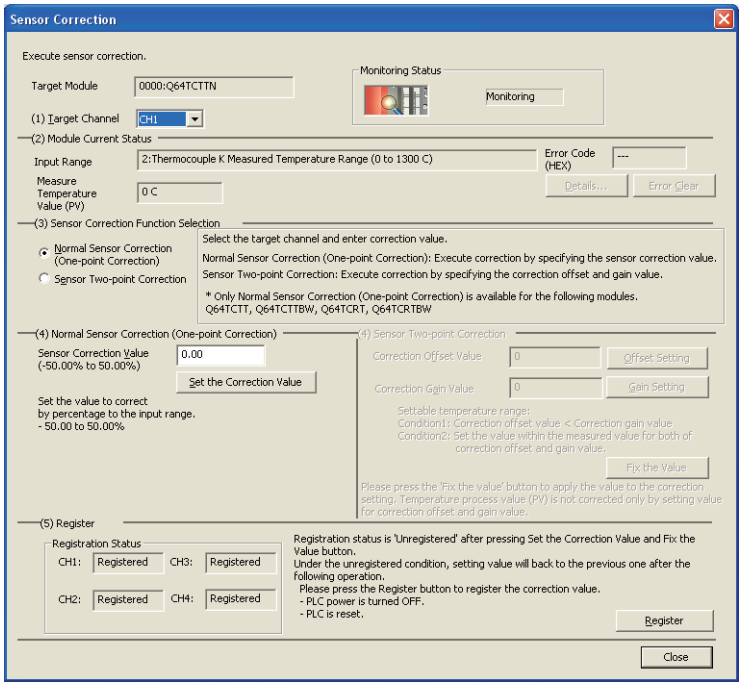
1. **Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [Temperature Control Module] ⇒ [Sensor Correction].**

   he Module Selection (Sensor Correction Function) screen is displayed.



2. **Select a module, and click the OK button.**

   The Sensor Correction screen is displayed.



3. **Select the target channel from "(1) Target Channel".**

4. **Select a method for sensor correction from "(3) Sensor Correction Function Selection".**

   For details of setting items, refer to the user's manual of the module to be used.

5. **Enter a correction value on "(4) Normal Sensor Correction (One-point Correction)" or "(4) Sensor Two-point Correction", and click the [Set the Correction Value] / [Offset Setting] / [Gain Setting] button.**

   The set values are written to the buffer memory of the module.

6. **For "(4) Sensor Two-point Correction", click the [Fix the Value] button.**

7. **Click the [Register] button.**

   The correction value is registered to the module.

Screen button

For details of screen buttons, refer to Section 3.1.1.

Point

- **Precautions when initial settings are set on PLC parameter**
  When the initial settings are set on the PLC parameter, if the power is turned OFF to ON, or the CPU module is reset and then canceled after the execution of sensor correction on the Sensor Correction screen, the value of "Sensor correction value setting" set on the PLC parameter is given priority at the start of the module.
  When using the value set on the Sensor Correction screen after the power is turned OFF to ON, or the CPU module is reset and then canceled, correct the setting value of "Sensor correction value setting" on the PLC parameter, and execute Write to PLC.

3.4 Counter Module

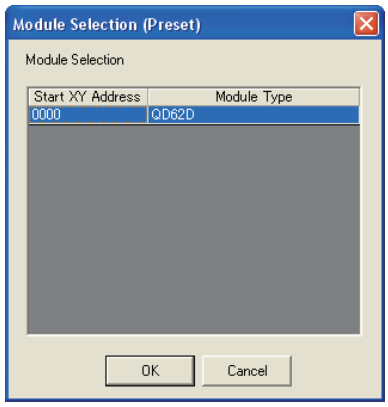
This section explains the operations of the intelligent function module tools related to the counter module.

3.4.1 Preset function

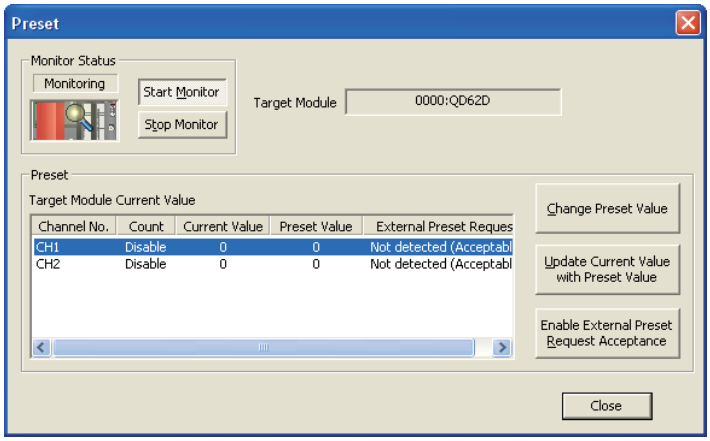
Perform the preset function.
For details of preset function, refer to the user's manual of the module to be used.

Operating procedure

1. **Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [Counter Module] ⇒ [Preset].**
   The Module Selection (Preset) screen is displayed.



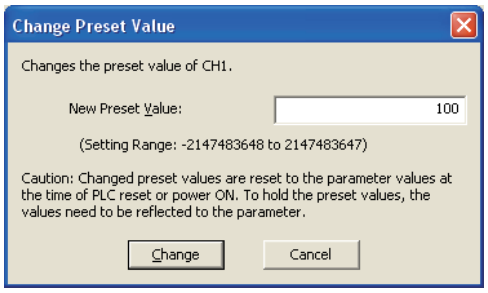
2. **Select a module and click the OK button.**
   The Preset screen is displayed.



3. **Select a channel number to which the preset is performed.**

4. **Click the** Change Preset Value **button.**

The Change Preset Value screen is displayed.



5. **Enter a preset value to "New Preset Value".**

6. **Click the** Change **button.**

The set preset value is written to the buffer memory of the module.

Screen button

- Update Current Value with Preset Value

Click to execute the preset from this screen.
Update the current value of the selected channel with the preset value.

- Enable External Preset Request Acceptance

Click to execute the preset by the external control signal.
Validates the reception of the external preset request of the selected channel.

3.5 QD75/LD75 Positioning Module

This section explains the operations of the intelligent function module tools related to the QD75/LD75 positioning module.

⚠ CAUTION

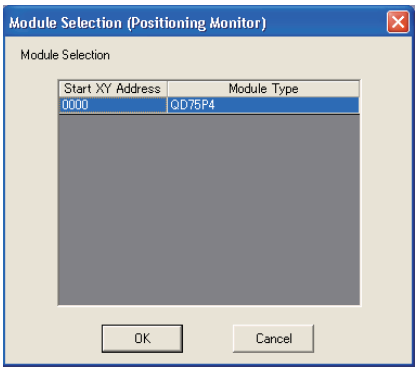
- **The positioning test functions of OPR, JOG, inching or positioning data for QD75/LD75 positioning module must be executed with the programmable controller set to STOP after the manual has been carefully read and the safety has been ensured. Specially when executing the function on the network system, ensure the safety thoroughly since the machinery whose operation cannot be checked by an operator may be activated. The operation failure may cause the injury or machine damage.**

3.5.1 Positioning monitor

Execute the positioning monitor of QD75/LD75 positioning module.
The positioning monitor is used for checking an operation of QD75/LD75 positioning module or debugging.
When debugging a program such as ladder, use the Intelligent Function Module Monitor. (☞ Section 2.4)
For details of the monitor items, refer to the user's manual of the module to be used.

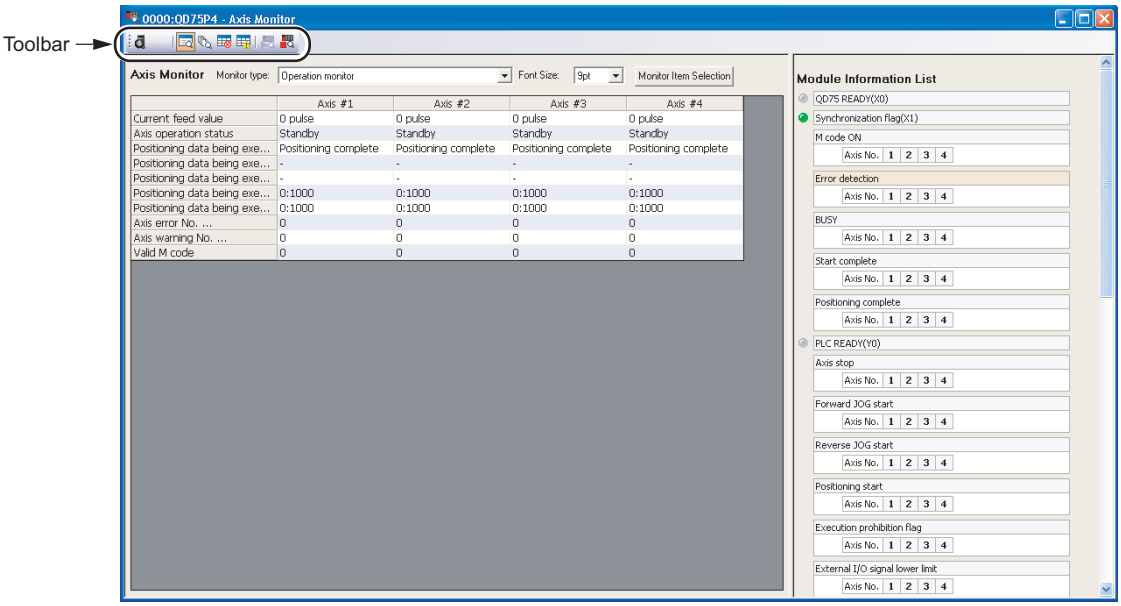
Operating procedure

1. **Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [QD75/LD75 Positioning Module] ⇒ [Positioning Monitor] ( ).**
   The Module Selection (Positioning Monitor) screen is displayed.

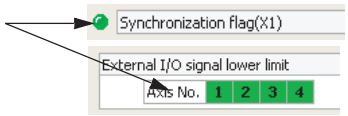


2. **Select a module and click the OK button.**

The monitor screen of positioning module is displayed.



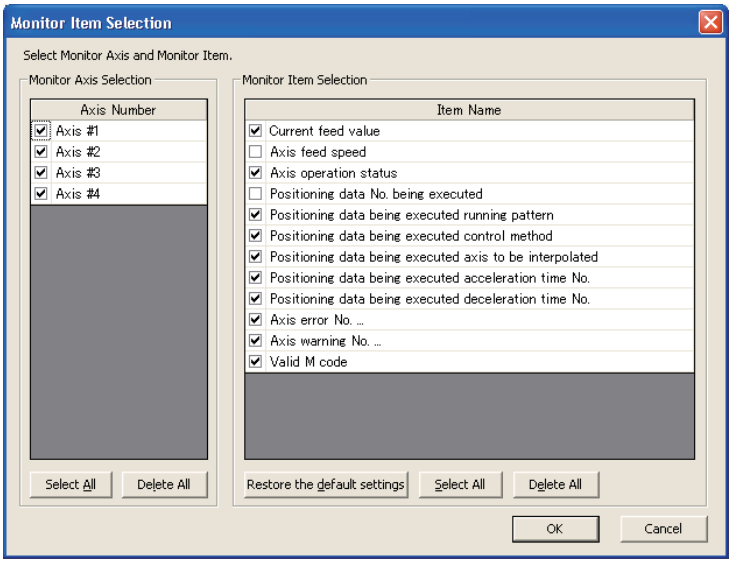
Display contents

Item		Description
Toolbar		Display tool buttons for executing each function. Check the histories and start/stop monitoring with each tool button. For details of each history, refer to the following sections. ☞ ■ Starting history ☞ ■ Error history ☞ ■ Warning history
Axis Monitor		Display the monitoring result of positioning module.
	Monitor type	Select a monitor item. The monitor items are as follows. • Operation monitor • Operation monitor (Axis control) • Operation monitor (Speed-position switching control) • Operation monitor (Position-speed switching control) • Operation monitor (OPR monitor) • Operation monitor (JOG/manual pulse) • Servo monitor (Servo state) • Servo monitor (Torque control/servo load factor) • Servo monitor (Content of servo parameter setting) • Servo monitor (Servo parameter error)
	Font Size	Set a font for the Axis Monitor screen.
Module Information list		Monitor the items such as QD75 READY (X0), Synchronization flag (X1), M code ON for each axis. The color is turned to green when it is turned ON. 

Screen button

● Monitor Item Selection

The Monitor Item Selection screen is displayed.
Select axes of monitor target or monitor items.
The screen when "Operation monitor" is selected as a monitor type is as shown below.

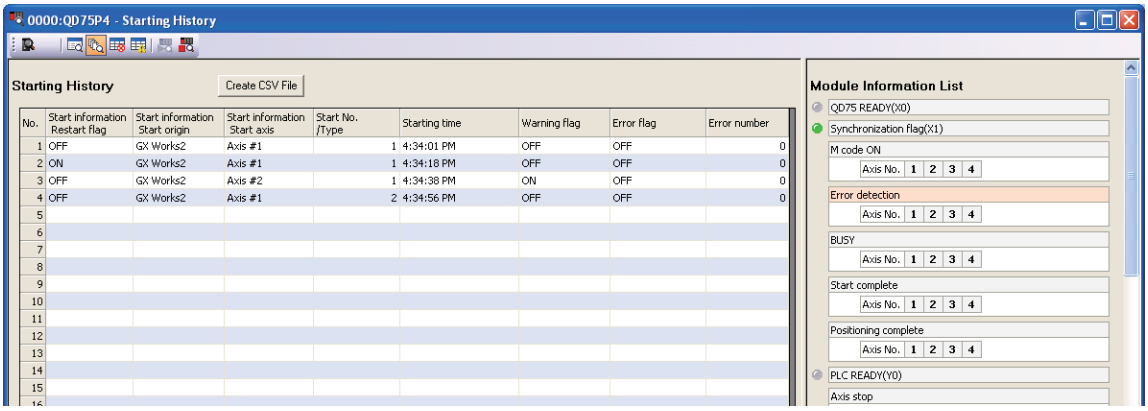


■ Starting history

Monitor the starting history which is stored in a buffer memory of QD75/LD75 positioning module.

Operating procedure

- Right-click on the Positioning Monitor screen and select [Starting History] from the shortcut menu.



Screen button

● Create CSV File

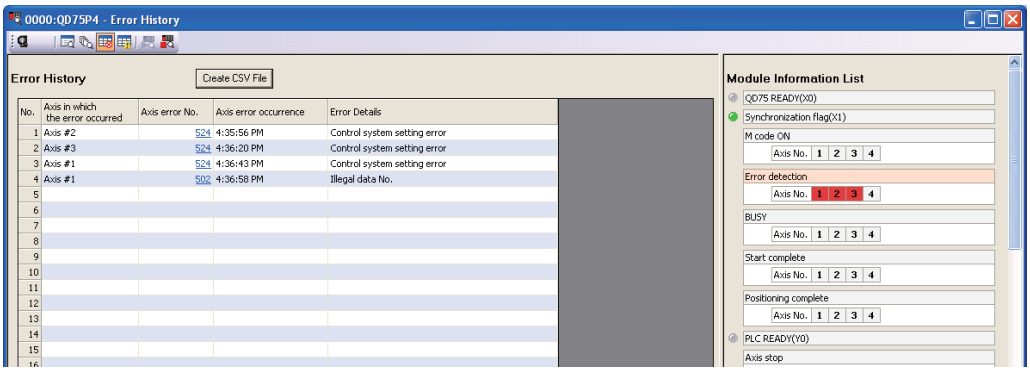
Save the currently displayed history to a file in the CSV file format.

■ Error history

Monitor the error history which is stored in a buffer memory of QD75/LD75 positioning module.

Operating procedure

- Right-click on the Positioning Monitor screen and select [Error History] from the shortcut menu.



Screen button

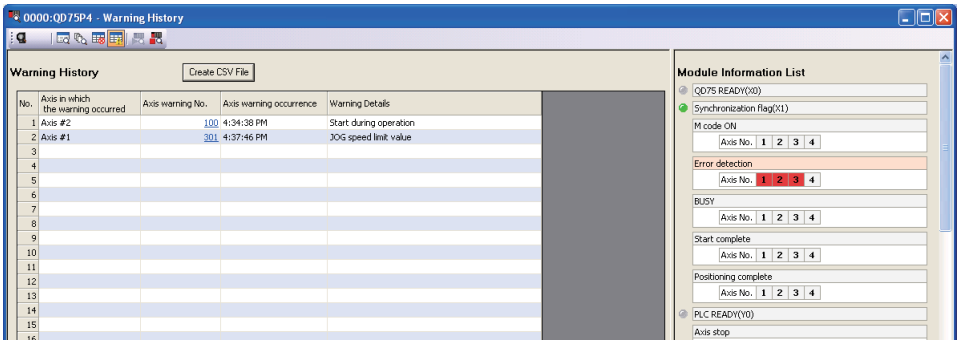
For the screen buttons, refer to ■ Starting history.

■ Warning history

Monitor the warning history which is stored in a buffer memory of QD75/LD75 positioning module.

Operating procedure

- Right-click on the Positioning Monitor screen and select [Warning History] from the shortcut menu.



Screen button

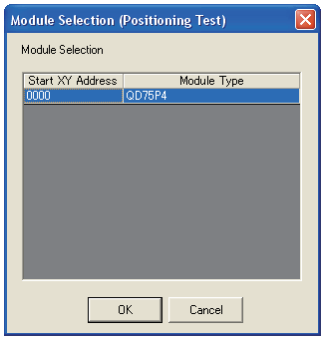
For the screen buttons, refer to ■ Starting history.

3.5.2 Positioning test

Perform the positioning test of QD75/LD75 positioning module.
For details of testing items, refer to the user's manual of the module to be used.

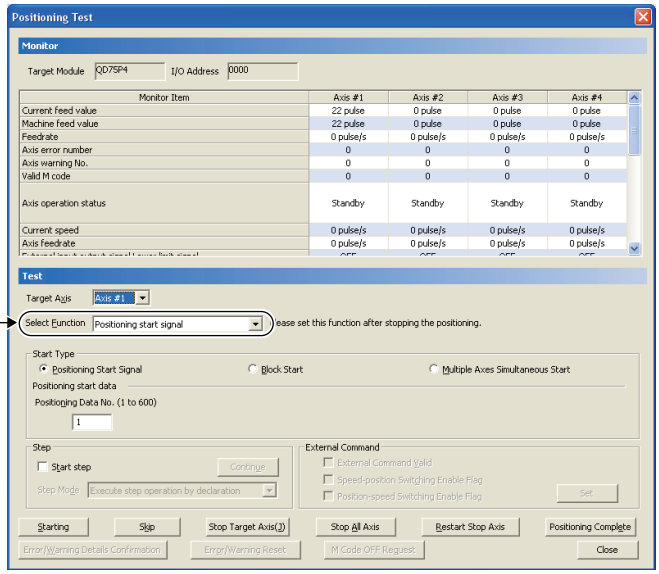
Operating procedure

1. **Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [QD75/LD75 Positioning Module] ⇒ [Positioning Test] ( ).**
   The Module Selection (Positioning Test) screen is displayed.



2. **Select a module and click the OK button.**

The Positioning Test screen is displayed.



The test function can be switched by selecting an item in "Select Function" under "Test" section. For details of each test function, refer to the following sections.

☞ ■ Positioning start test

☞ ■ JOG, manual pulse generator, and OPR tests

☞ ■ Speed change test

☞ ■ Current value change test

Screen button

● Starting

Starts the positioning operation.

● Skip

Decelerates and stops the currently-running sequential positioning operation, and starts the operation of the next positioning number by clicking the button during the positioning operation.

● Stop Target Axis(J)

Stops the positioning control of the selected "Target Axis" by clicking the button during the positioning operation.

● Stop All Axis

Stops the positioning control of all the axes by clicking the button during the positioning operation.

● Restart Stop Axis

Restarts the suspended positioning operation by clicking the button when the positioning operation is in a suspended status.

● Positioning Complete

Ends the positioning operation prior to the operation of the next positioning number.

● Error/Warning Details Confirmation

Displays the Error/Warning Details Confirmation screen when an error or warning is occurring to the axis set for "Target Axis". Check the error contents and the corrective action.

● Error/Warning Reset

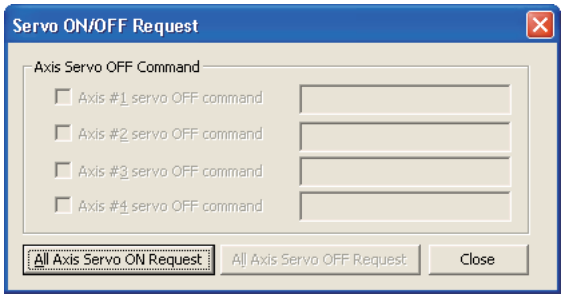
Clears the error or warning of the target axis when an error or warning is occurring to the axis set for "Target Axis".

● M Code OFF Request

Turns the M code status OFF when the axis with M code ON is set for "Target Axis".

● Servo ON/OFF Request

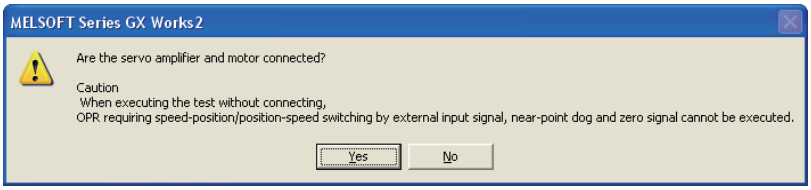
Performs the servo ON/OFF command for QD75M/MH.



Point

● **Testing before installing external devices such as servo amplifiers or motors.**

The following message is displayed after selecting a module. Click the No button.

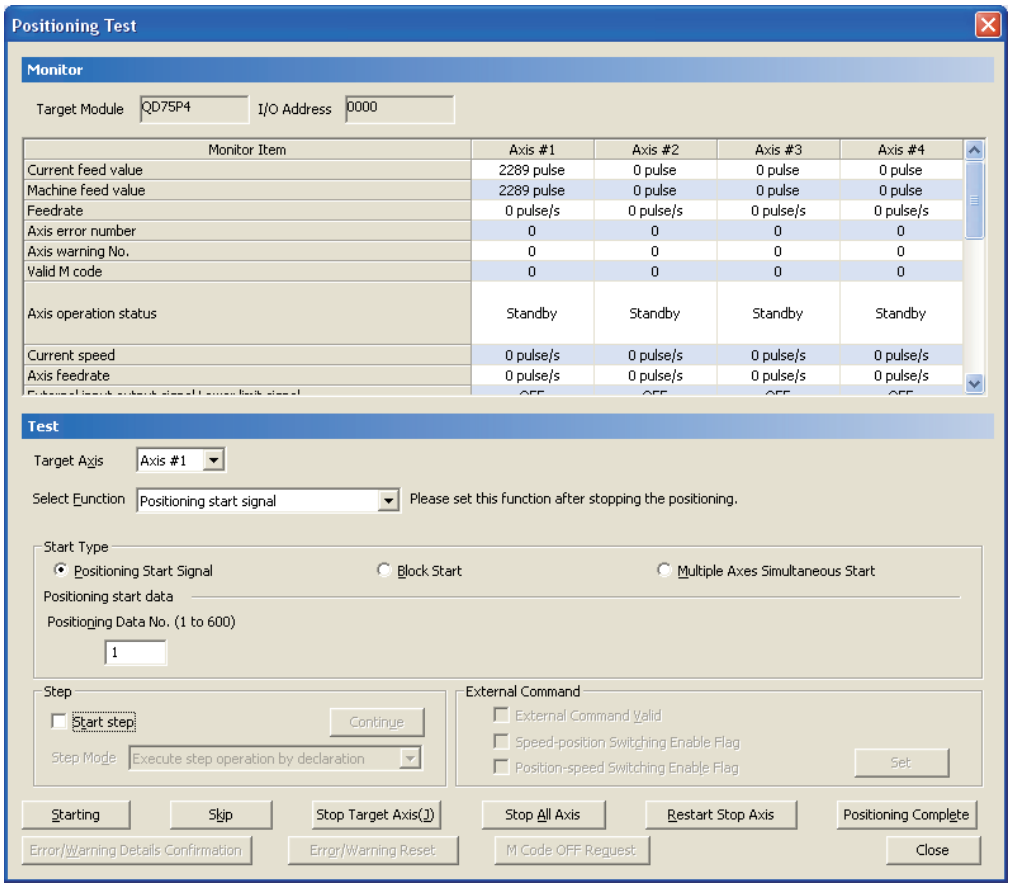


■ Positioning start test

Perform the test operation by specifying a positioning data number or a point number of block start data.

Operating procedure

1. **Select "Positioning start signal" for "Select Function" on the Positioning Test screen.**



2. **Set the items on the screen.**

Item			Description
Start Type			Select a start type for the test operation.
	Positioning Start Signal		Select this to perform the positioning start.
		Positioning Data No.	Set a positioning data number.
	Block Start		Select this to perform the block start.
		Block No.	Set a block number.
		Point No.	Set a point number.
	Multiple Axes Simultaneous Start		Select this to perform the multiple axes simultaneous start.
		Multiple Axes Simultaneous Positioning Start Data No.	Set positioning data numbers for each axis.
Step			Check this to perform the step start, and select the step mode.
External Command			Validates a speed-position switch and/or a position-speed switch.
	External Command Valid		Check this to validate external commands.
	Speed-position Switching Enable Flag		Check this to validate the external command of speed-position switch.
	Position-speed Switching Enable Flag		Check this to validate the external command of position-speed switch.

3. **Click the Starting button.**

The positioning operation is started.

Screen button

- Continue

Performs the step start from the next positioning data number when the button is clicked during the step standby status.

- Set

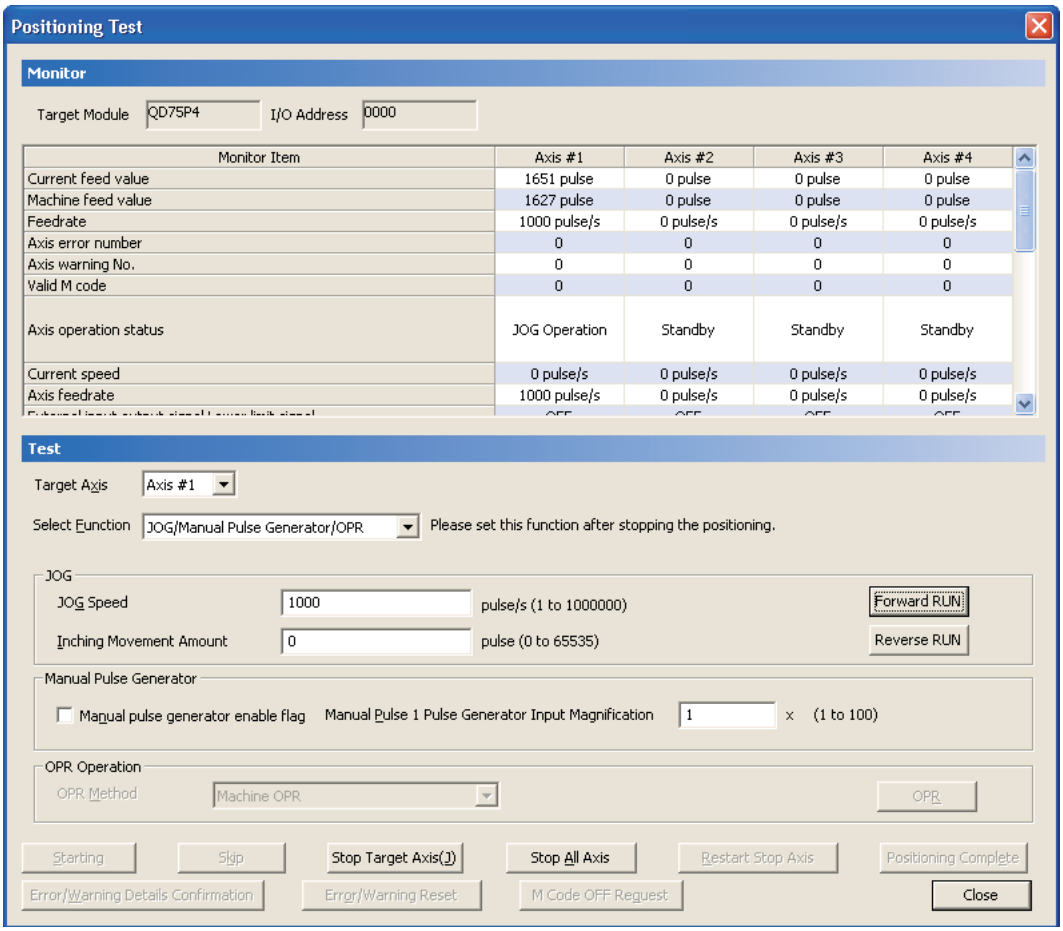
Validates the items checked for "External Command".

■ JOG, manual pulse generator, and OPR tests

Perform the JOG, manual pulse generator, and OPR tests.

Operating procedure

1. **Select "JOG/Manual Pulse Generator/OPR" for "Select Function" on the Positioning Test screen.**



2. **Set the items on the screen.**

Item		Description
JOG		–
	JOG Speed	Set the JOG speed for JOG operation. This item is ignored for inching operation.
	Inching Movement Amount	Set the travel amount for inching operation. Set '0' for JOG operation.
Manual Pulse Generator		Check "Manual pulse generator enable flag" to perform the manual pulse generator operation and enter a value for "Manual Pulse1 Pulse Generator Input Magnification".
OPR Operation		Select the OPR method.

3. **Click the** Forward RUN / Reverse RUN **button.**

For the JOG operation (when "Inching Movement Amount" is '0'), performs the JOG operation in forward rotation or reverse rotation while pressing the button.
For the inching operation (when "Inching Movement Amount" is more than '1'), outputs pulses for the amount of inching in forward rotation or reverse rotation by each click.

Screen button

- OPR

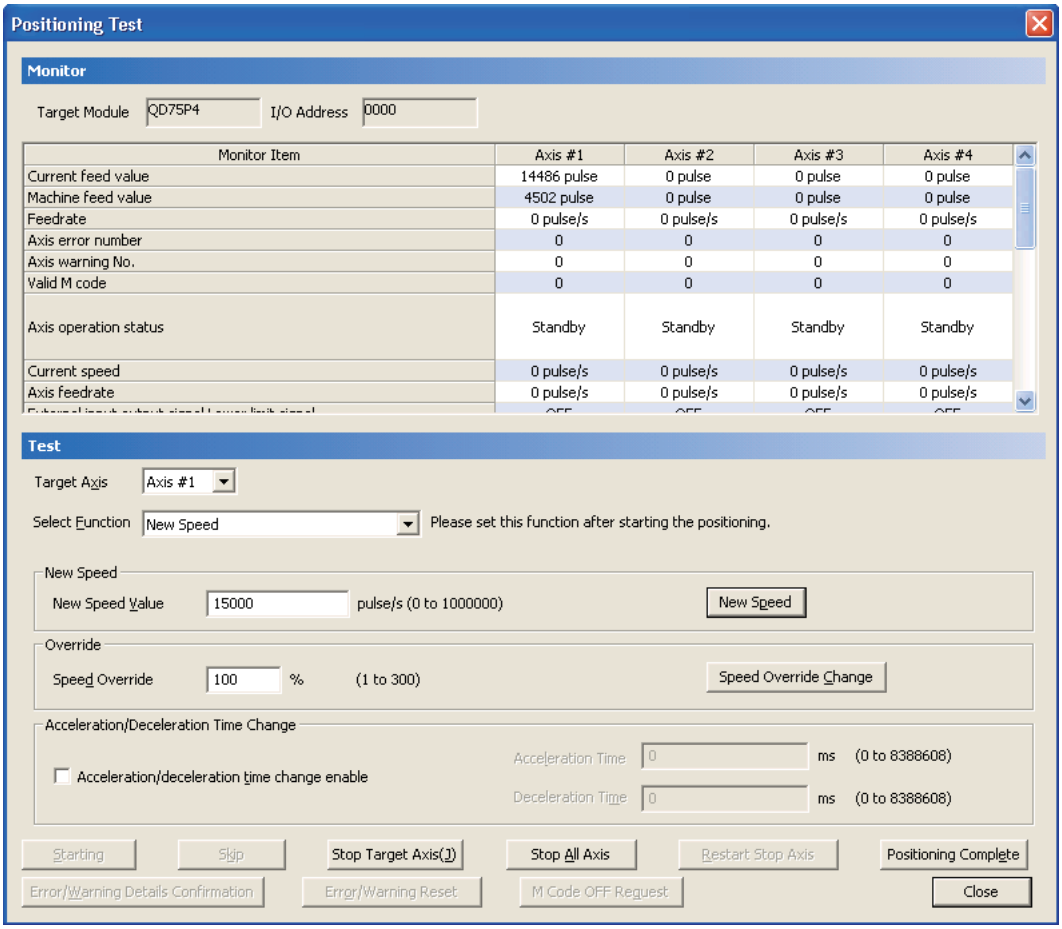
Performs the OPR control when the positioning operation is in a suspended status.

■ Speed change test

Change the speed of axis which is being operated under the positioning start test, JOG test, or OPR test.

Operating procedure

1. **Select "New Speed" for "Select Function" on the Positioning Test screen.**



2. **Set the items on the screen.**

Item	Description
New Speed	Set a speed. Set '0' to stop the operation.
Override	Set a value to override the speed of positioning operation.
Acceleration/Deceleration Time Change	Check this to permit the change on acceleration/deceleration time, and specify the acceleration time and/or deceleration time.

3. **Click the** New Speed **button.**

The speed is changed.

Screen button

● Speed Override Change

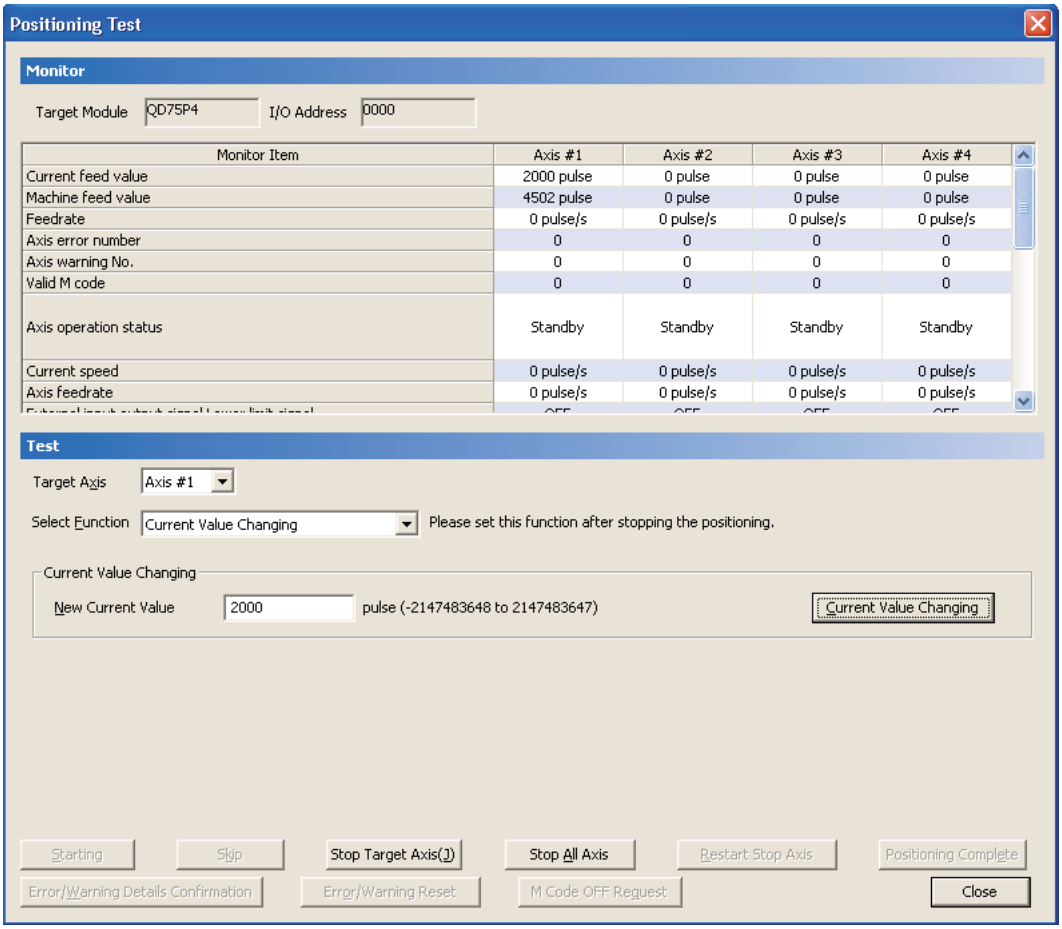
Performs the speed override during the positioning operation.

■ Current value change test

Change the current feed value when the positioning operation is in a suspended status or a step standby status.

Operating procedure

1. **Select "Current Value Changing" for "Select Function" on the Positioning Test screen.**



2. **Set the items on the screen.**

Item	Description
Current Value Changing	Set a new current value.

3. **Click the** Current Value Changing **button.**

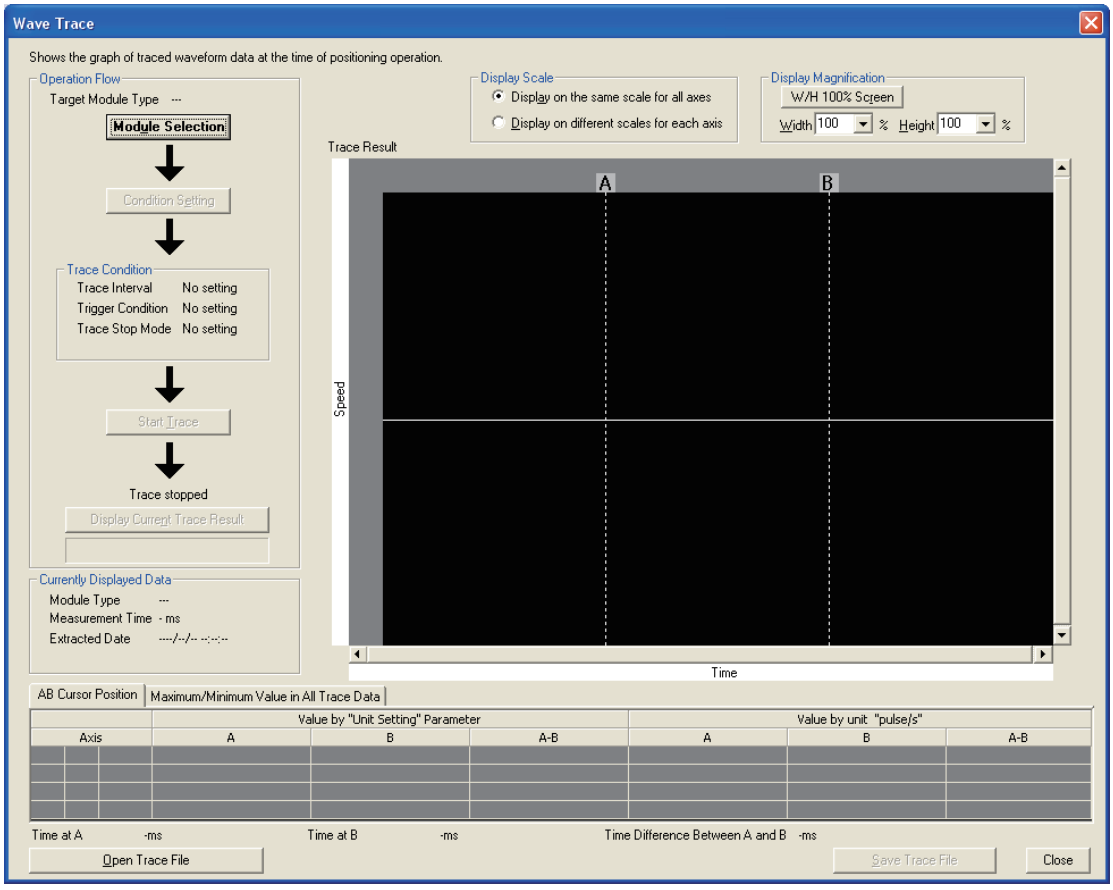
The current feed value is changed.

3.5.3 Wave trace

Perform the wave trace of QD75/LD75 positioning module.
The wave trace function displays the waveform data of speed command during the positioning operation. The value shifts of each axis operated online by the positioning module are displayed.
This function is not supported by QD75M/QD75MH.

Screen display

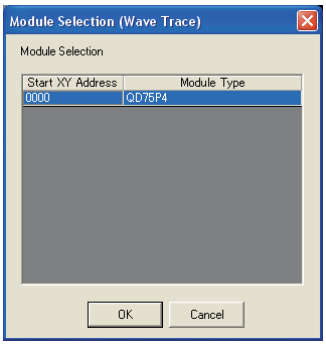
Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [QD75/LD75 Positioning Module] ⇒ [Wave Trace] ( ).



Operating procedure

1. **Click the** Module Selection **button.**

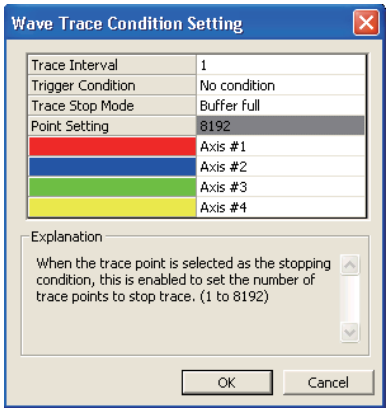
   The Module Selection (Wave Trace) screen is displayed.



2. **Select a module to perform the wave trace and click the** OK **button.**

3. **Click the** Condition Setting **button.**

   The Wave Trace Condition Setting screen is displayed.

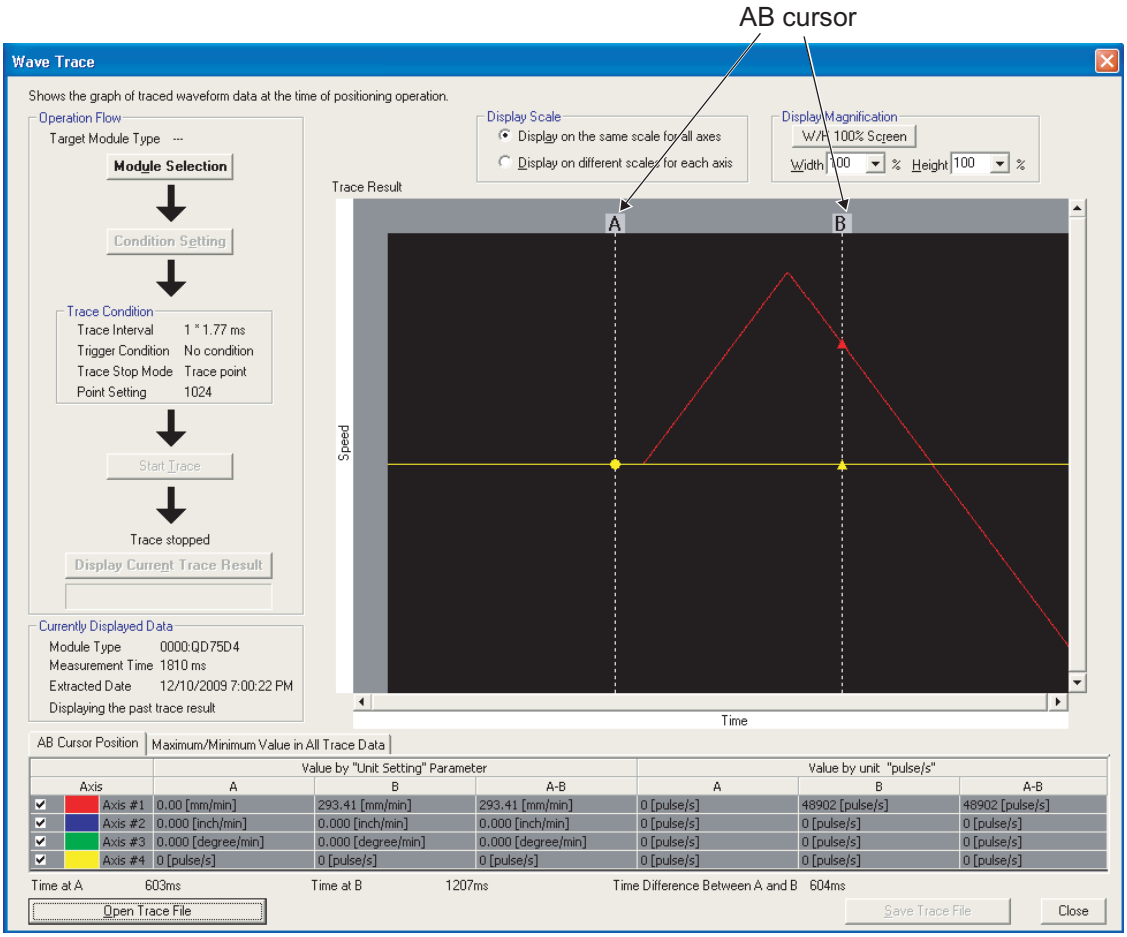


4. **Set the trace condition and click the** OK **button.**

5. **Click the** Start Trace **button.**

The wave trace is started.

When the completion condition is satisfied, or by clicking the Display Current Trace Result button, the trace data are read and displayed on the screen.
The values at each position can be checked on the <<AB Cursor Position>> tab by dragging the AB cursor in "Trace Result".



Screen button

- W/H 100% Screen

Returns the width and height scales to 100%, and initializes the graph display scale.

- Open Trace File

Reads the trace data stored in a personal computer and displays them on the Wave Trace screen.

- Save Trace File

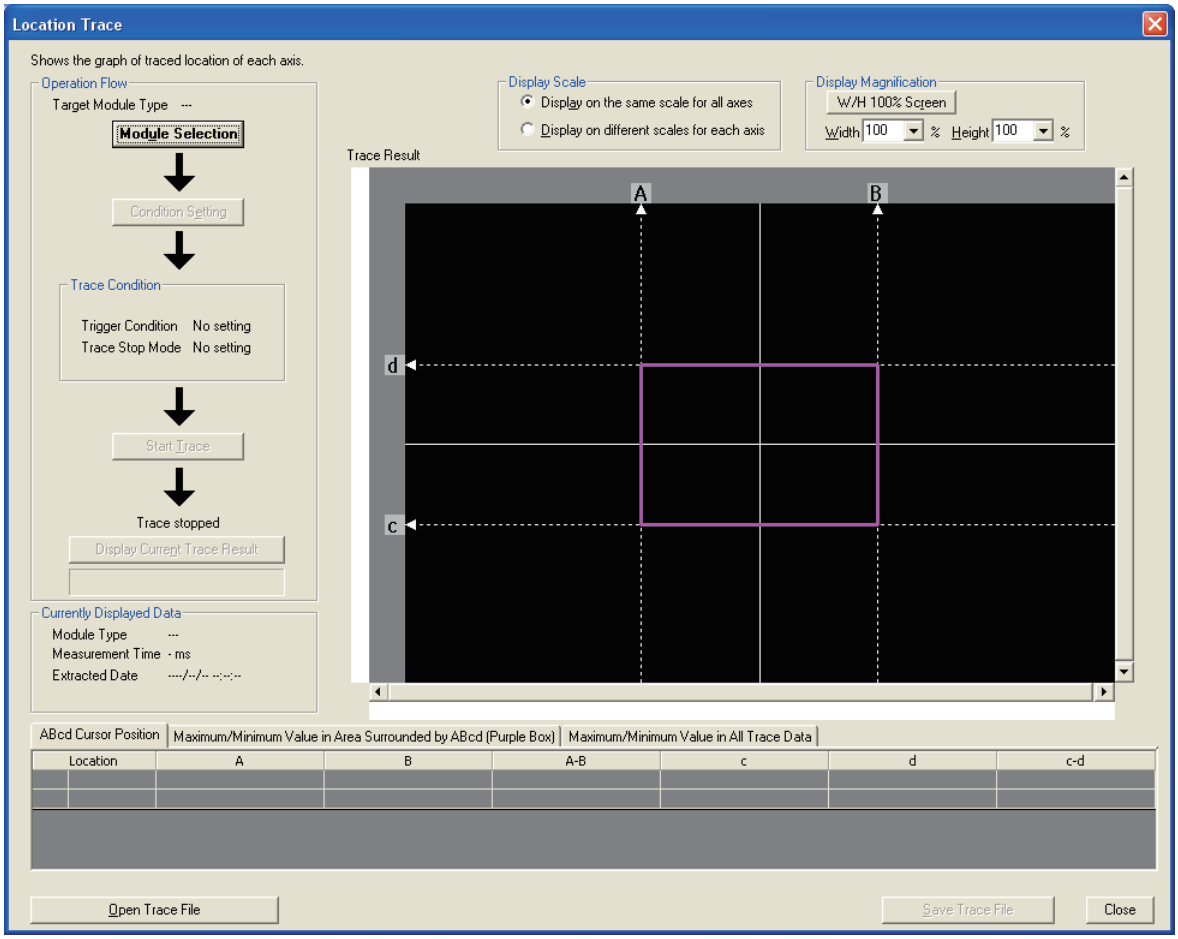
Stores the obtained trace data to a personal computer.

3.5.4 Location trace

Perform the location trace of QD75/LD75 positioning module.
The location trace function displays the location data of two-axis interpolation and simultaneous start (two axes).
This function is not supported by QD75M/QD75MH.

Screen display

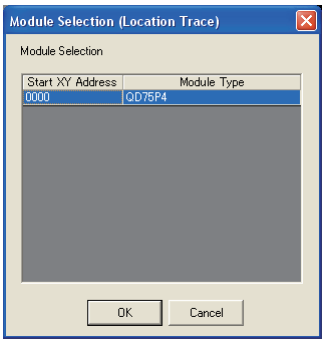
Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [QD75/LD75 Positioning Module] ⇒ [Location Trace] ( ).



Operating procedure

1. **Click the** Module Selection **button.**

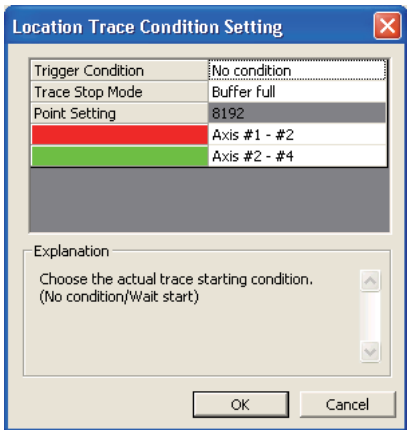
   The Module Selection (Location Trace) screen is displayed.



2. **Select a module to perform the location trace and click the** OK **button.**

3. **Click the** Condition Setting **button.**

   The Location Trace Condition Setting screen is displayed.

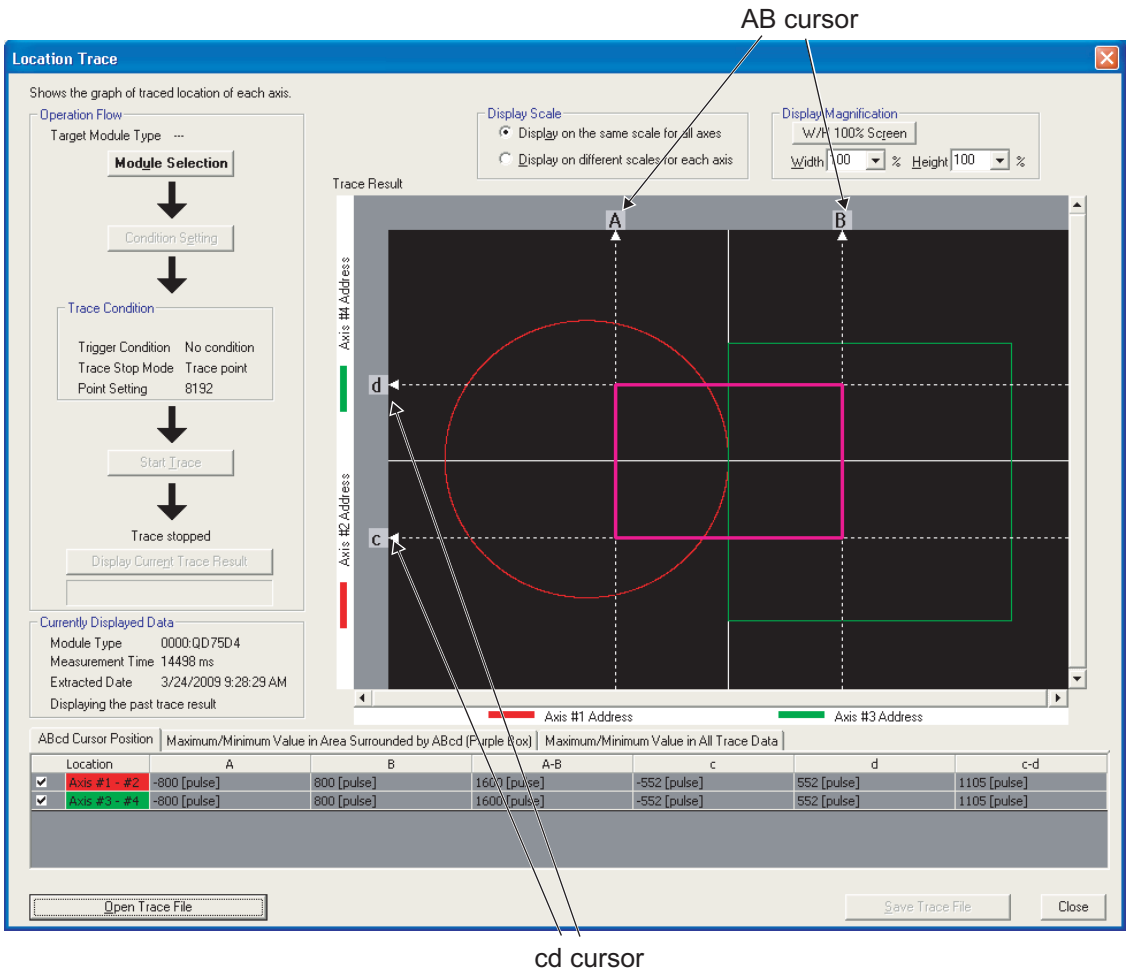


4. **Set the trace condition and click the** OK **button.**

5. **Click the Start Trace button.**

The location trace is started.

When the completion condition is satisfied, or by clicking the Display Current Trace Result button, the trace data are read and displayed on the screen.
The values at each position can be checked on the <<ABcd Cursor Position>> tab by dragging the AB cursor/cd cursor in "Trace Result".



Screen button

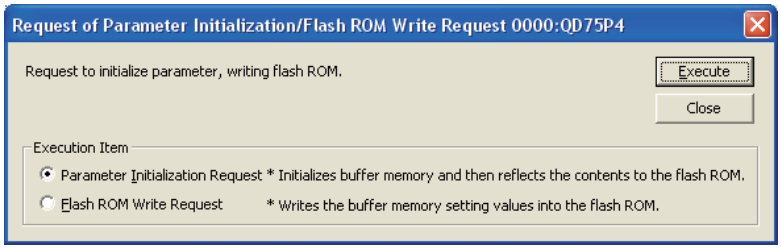
For the screen buttons, refer to Section 3.5.3.

3.5.5 Requesting parameter initialization and flash ROM write

Request a buffer memory data write from the QD75/LD75 positioning module to the flash ROM. Buffer memory data can be initialized and applied to the flash ROM.
Parameters, servo parameters, positioning data, and block start data (including condition data) of all ranges are written in batch from the buffer memory to the flash ROM.

Operating procedure

1. **Select [Tool] ⇒ [Request of Parameter Initialization/Flash ROM Write Request].**
   The Request of Parameter Initialization/Flash ROM Write Request screen is displayed.



2. **Select an item under "Execution Item", and click the Execute button.**
   The request of the selected item is executed.

3.5.6 Convenient functions for editing data

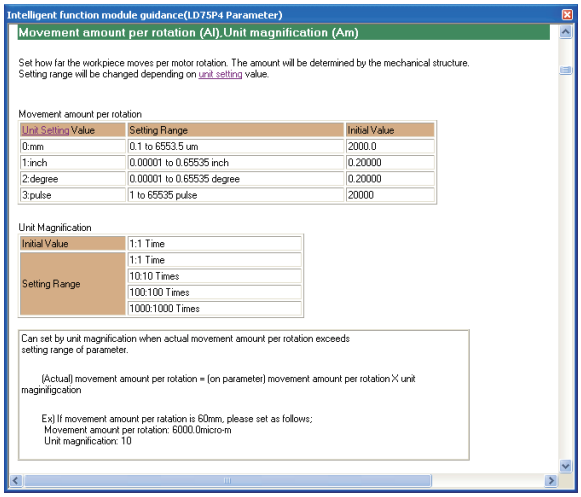
The following explains the convenient functions for editing data of QD75/LD75 positioning module.

■ Displaying guidance of QD75/LD75 positioning module

For QD75/LD75 positioning module, the explanations of each item of intelligent function module data can be checked on the Intelligent Function Module Guidance window.
A detailed explanation of the item at the cursor position is displayed when editing data.

Screen display

Select [View] ⇒ [Docking Window] ⇒ [Intelligent Function Module Guidance] ( ).



Point

- **Items displayed in blue**
  A detailed explanation of the selected item can be displayed by clicking the item displayed in blue.
- **Displaying/Hiding Intelligent Function Module Guidance window**
  To display/hide the Intelligent Function Module Guidance window, select [Tool] ⇒ [Options] ⇒ "Intelligent Function Module" ⇒ "Guidance" ⇒ "Display intelligent function module guidance".
  For details of displaying/hiding the Intelligent Function Module Guidance window, refer to the following manual.
  ☞ GX Works2 Version 1 Operating Manual (Common)

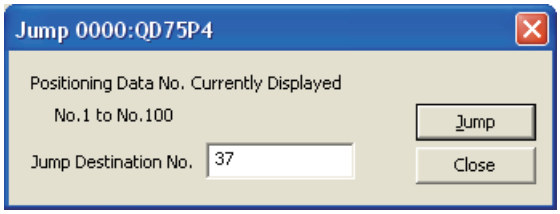
■ Jump

Move the cursor to the specified data number on the positioning data setting screen.

Operating procedure

1. **Select [Edit] ⇒ [Jump].**

   The Jump screen is displayed.



2. **Enter a positioning data number of the jump destination.**

3. **Click the** Jump **button.**

   The cursor moves to the specified positioning data number.

■ Setting maximum/minimum/default value

Set a maximum value, minimum value, or default value on the setting screen of parameters or servo parameters.

Operating procedure

1. **Select the item to which a maximum value, minimum value, or default value is set.**

2. **Select [Edit] ⇒ [Set Maximum Value]/[Set Minimum Value]/[Set Default Value].**

   The maximum/minimum/default value is set.

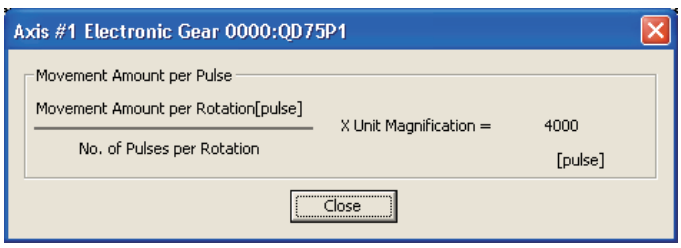
■ Calculating electronic gear

Check the electronic gear on the parameter setting screen according to the set data.

Operating procedure

- Select [Edit] ⇒ [Computation of Electronic Gear].

  The calculation result of the electronic gear is displayed.



■ Initialization of rows/columns

Initialize data in the rows/columns on the positioning data setting screen or the block start data setting screen.

Operating procedure

1. **Select the row(s) or column(s) whose data to be initialized.**
2. **Select [Edit] ⇒ [Initialization of Row]/[Initialization of Column].**
   The data of the selected row(s) or column(s) are initialized.

■ Inserting/deleting rows

Insert/delete rows on the positioning data setting screen or the block start data setting screen.

Operating procedure

1. **Select the item(s) where a row(s) is/are inserted above or whose row(s) to be deleted.**
2. **Select [Edit] ⇒ [Insert Row]/[Delete Row].**
   The row(s) is/are inserted above the selected item, or the row(s) of the selected item(s) is/are deleted.

■ Copying/Pasting positioning data

Copy/paste the setting of positioning data on the positioning data setting screen.

Operating procedure

1. **Select the item of the positioning data number to be copied.**
2. **Select [Edit] ⇒ [Positioning Data Copy].**
   Data of the positioning data number at the cursor position are copied.
3. **Select the item of the positioning data number to be pasted.**
4. **Select [Edit] ⇒ [Positioning Data Paste].**
   The copied data of positioning data number is pasted to the selected row.

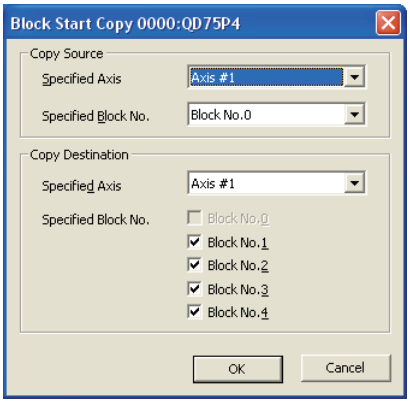
■ Block start copy

Utilize specified block start data to another axis or block on the block start data setting screen.

Operating procedure

1. **Select [Edit] ⇒ [Block Start Copy].**

   The Block Start Copy screen is displayed.
   The screen image below is an example when the operation is performed on the data of QD75P4.



2. **Specify the axis or block number of the copy destination, and click the [OK] button.**

   The block start copy is executed.

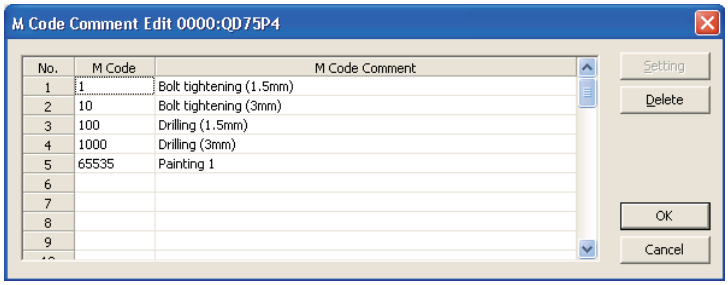
■ Editing M code comments

Set comments to the M code, which is required for synchronizing with the positioning control, on the positioning data setting screen. M code comments are saved only within the project.

Operating procedure

1. **Select [Edit] ⇒ [M Code Comment Edit].**

   The M Code Comment Edit screen is displayed.



2. **Set the items on the screen.**

Item	Description
M Code	Enter M code numbers within the range from 1 to 65535. A maximum number of M code comments that can be set is 50.
M Code Comment	Enter M code comments.

3. **Click the [OK] button.**

   M code comments are set.

Screen button

- Setting

  Reflects the M code at the cursor position on the M Code Comment Edit screen to the row where the cursor is positioned on the positioning data setting screen.

- Delete

  Deletes the M code and M code comment of the row at the cursor position.

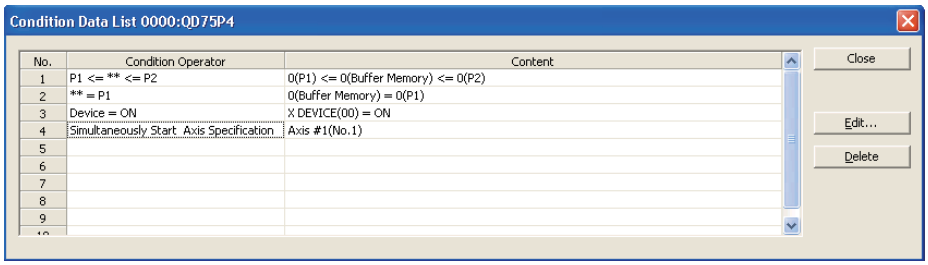
■ Editing condition data

Set condition data such as condition start, wait start, simultaneous start of block start data, and start condition of FOR condition on the positioning data setting screen or the block start data setting screen.

Operating procedure

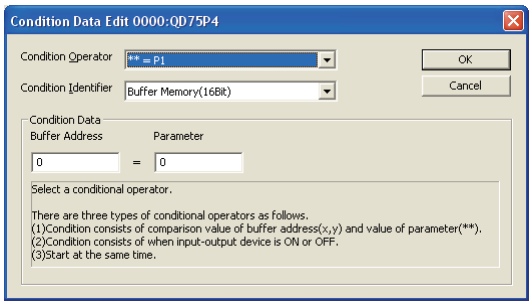
1. **Select [Edit] ⇒ [Condition Data Edit].**

   The Condition Data List screen is displayed.



2. **Select the item to which condition data are set, and click the Edit... button.**

   The Condition Data Edit screen is displayed.

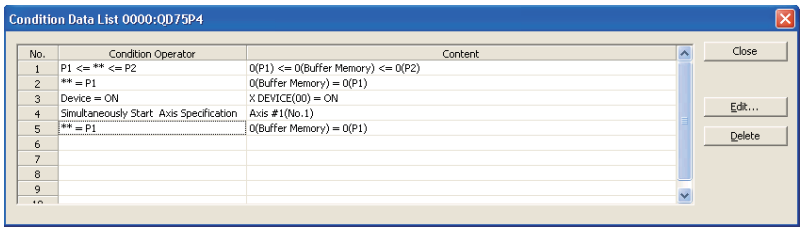


3. **Set the items on the screen.**

Item	Description
Condition Operator	Select a condition operator. "**" indicates buffer memory address. "P1" and "P2" indicate parameters (values to be specified). "Device" indicates X and Y devices.
Condition Identifier	Select a condition identifier.
Condition Data	Enter the condition data such as buffer memory address or parameter.

4. **Click the [OK] button.**

The condition data are set.



Screen button

● Delete

Deletes the condition data at the cursor.

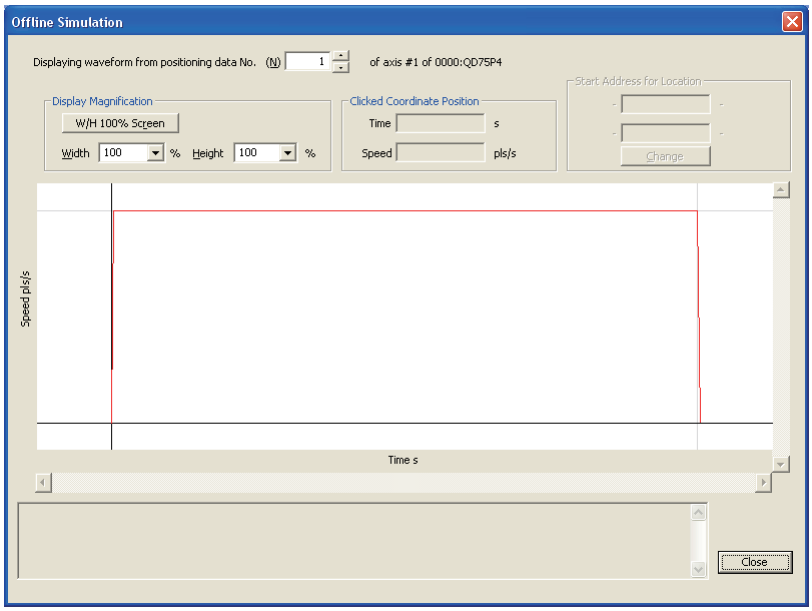
■ Offline simulation

Simulate the waveform and location of set positioning data offline.

Operating procedure

- Open the positioning data setting screen, and select [Tool] ⇒ [Offline Simulation], or click the [Offline Simulation] button.

  The Offline Simulation screen is displayed.



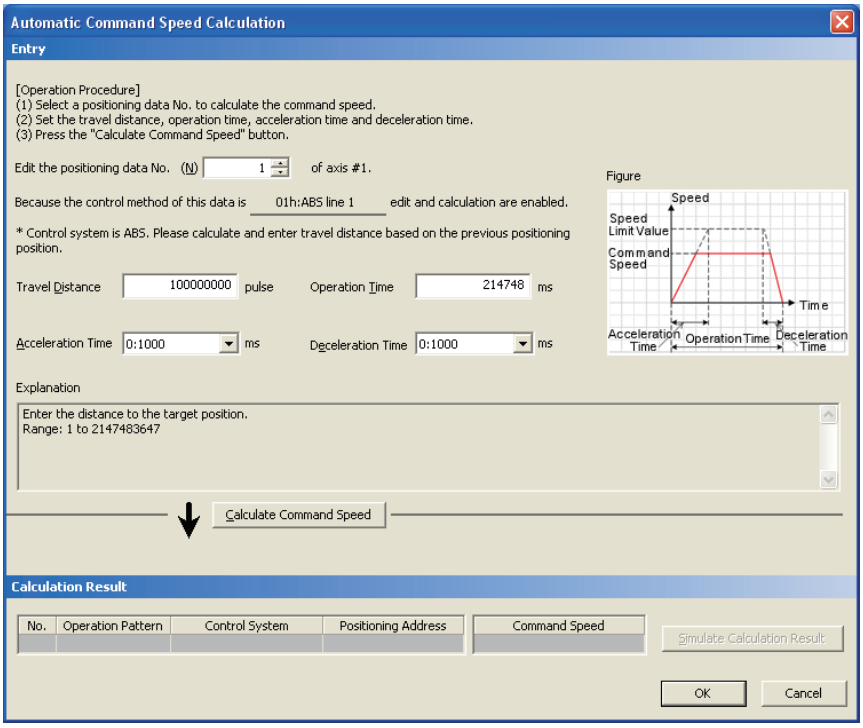
■ Automatic command speed calculation

Automatically calculate the constant speed of traveling time between the start position and the target position.

Operating procedure

1. **Open the positioning data setting screen, and select [Tool] ⇒ [Automatic Command Speed Calculation], or click the Automatic Command Speed Calculation button.**

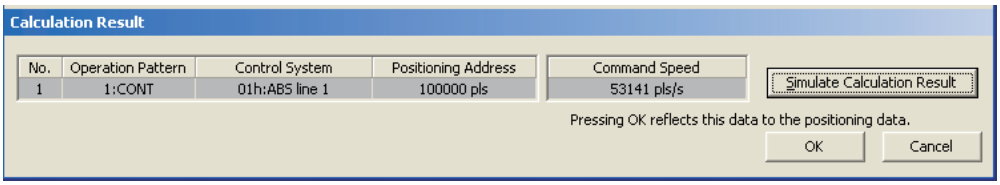
   The Automatic Command Speed Calculation screen is displayed.



2. **Set the items according to the instructions on the screen.**

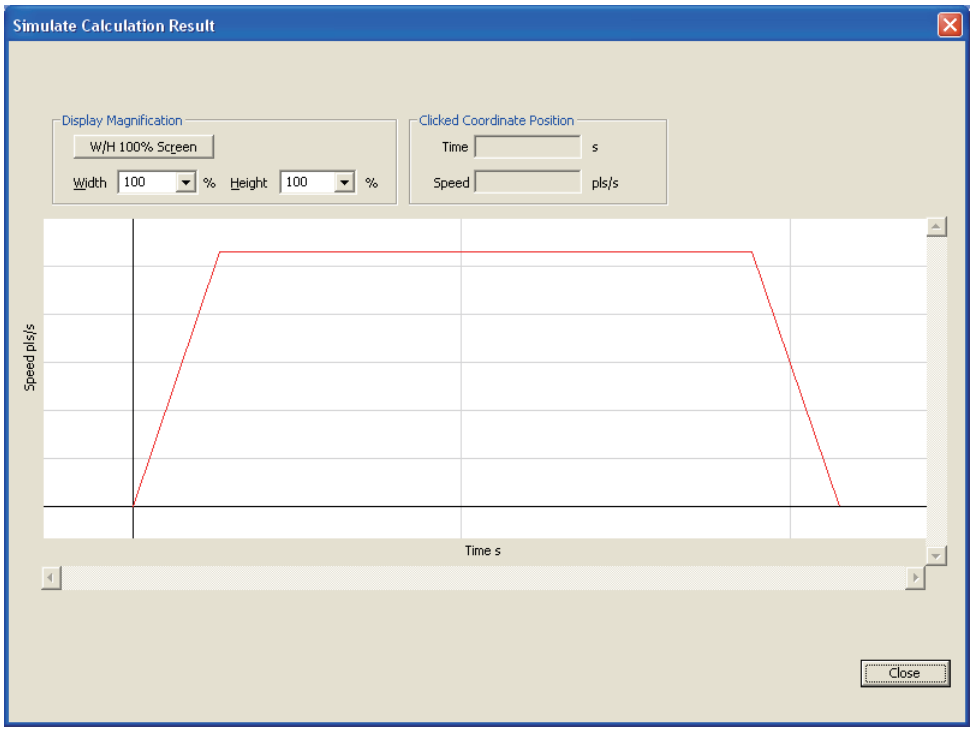
3. **Click the Calculate Command Speed button.**

   The calculation result of command speed is displayed under "Calculation Result".



4. **Click the** Simulate Calculation Result **button.**

The Simulate Calculation Result screen is displayed.



5. **Click the** Close **button.**

6. **Click the** OK **button.**

The calculation result is applied to the positioning data.

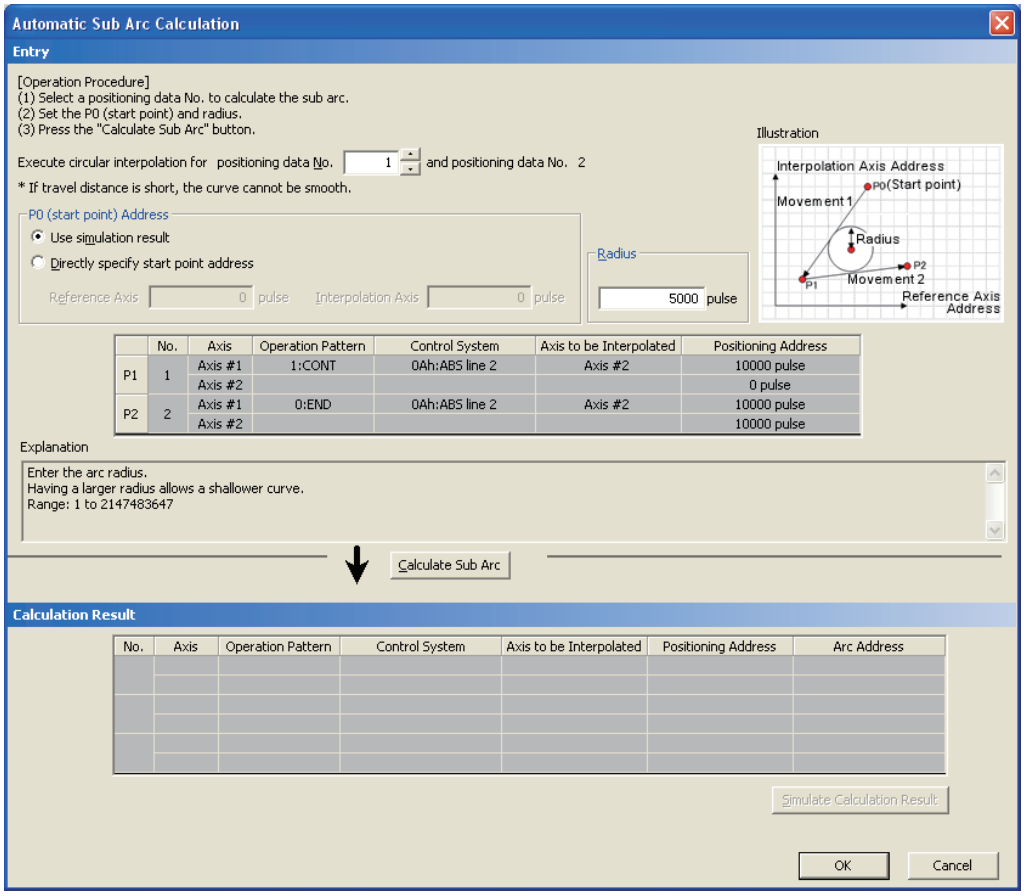
■ Automatic sub arc calculation

Automatically calculate the positioning data of circular interpolation control to form a smooth arc (curve line) from the angle position created by two continuous linear interpolation controls.

Operating procedure

1. **Open the positioning data setting screen, and select [Tool] ⇒ [Automatic Sub Arc Calculation], or click the [Automatic Sub Arc Calculation] button.**

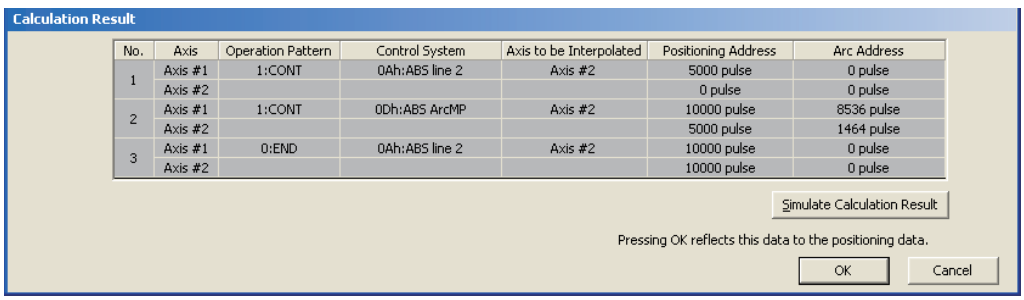
   The Automatic Sub Arc Calculation screen is displayed.



2. **Set the items according to the instructions on the screen.**

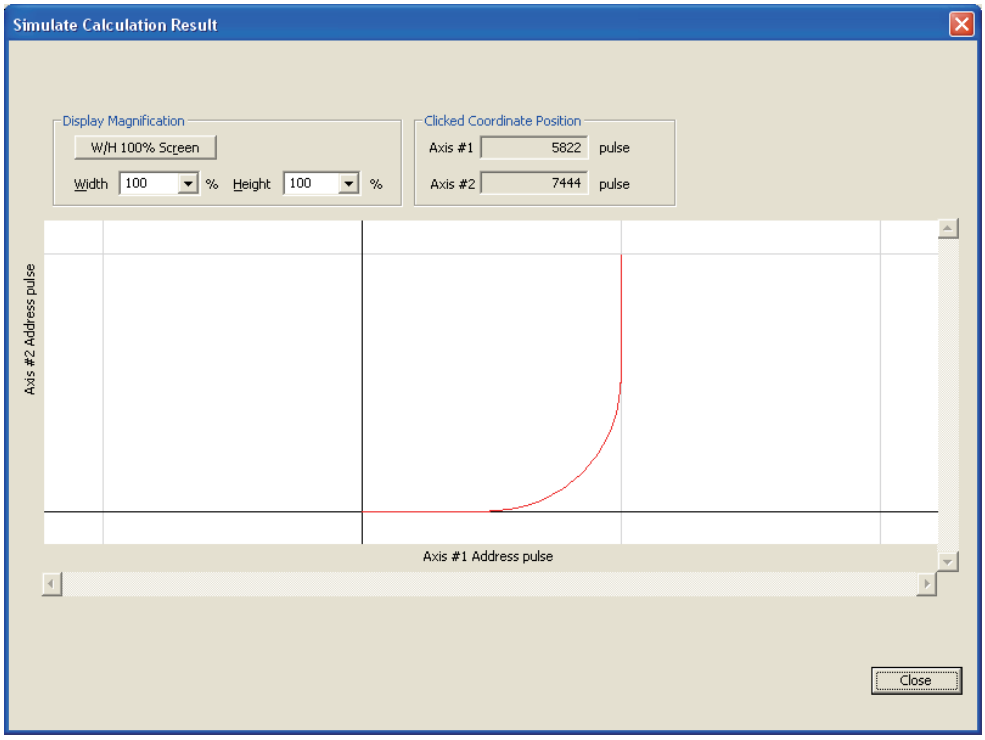
3. **Click the [Calculate Sub Arc] button.**

   The calculation result of sub arc is displayed under "Calculation Result".



4. **Click the** Simulate Calculation Result **button.**

The Simulate Calculation Result screen is displayed.



5. **Click the** Close **button.**

6. **Click the** OK **button.**

The arc interpolation control data are added to the positioning data.

3.5.7 Saving/reading data of positioning module

Save the data of positioning module set with GX Works2. Also, read the data of positioning module from the saved file, and update the data of positioning module on a project.
Use this operation to utilize only the data of positioning module from a GX Works2 project.
The parameter, positioning data, block starting data, servo parameter data of the QD75/LD75 positioning module can be saved/read.

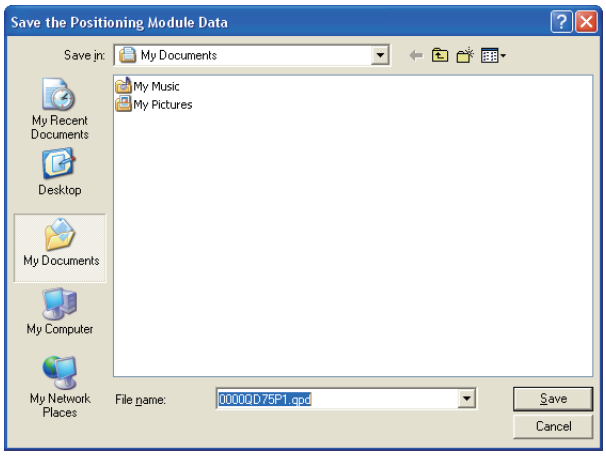
■ Saving data of positioning module

Save the data of positioning module to a file.

Operating procedure

1. **Select a positioning module to be saved to a file from the Project view.**

2. **Select [Project] ⇒ [Intelligent Function Module] ⇒ [Save the Positioning Module Data].**
   The Save the Positioning Module Data screen is displayed.



3. **Enter a name of the file to be saved, and click the Save button.**
   The data of positioning module is saved in the save destination.

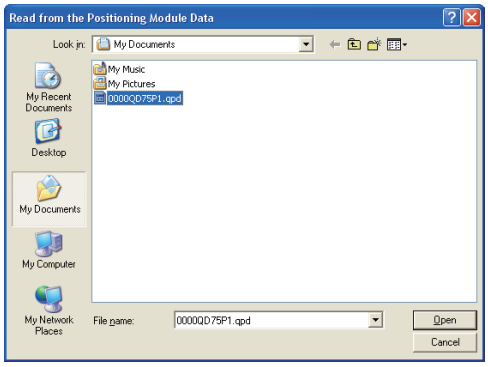
■ Reading data of positioning module

Read the data of positioning module from a file, and update the data of positioning module on an open project.

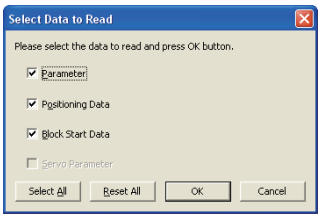
Operating procedure

1. **Select a positioning module to which the data of positioning module is updated from the Project view.**

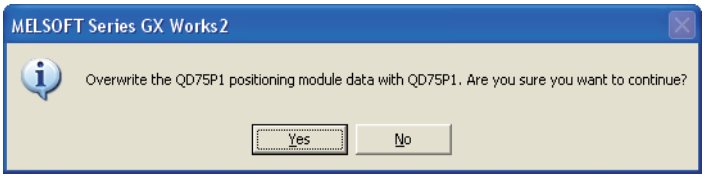
2. **Select [Project] ⇒ [Intelligent Function Module] ⇒ [Read from the Positioning Module Data].**
   The Read from the Positioning Module Data screen is displayed.



3. **Select a file name, and click the Open button.**
   The Select Data to Read screen is displayed.



4. **Check the data of positioning module to be read, and select the OK button.**
   The following message is displayed.



5. **Click the Yes button.**
   The data of positioning module selected on the Project view is overwritten.

Point

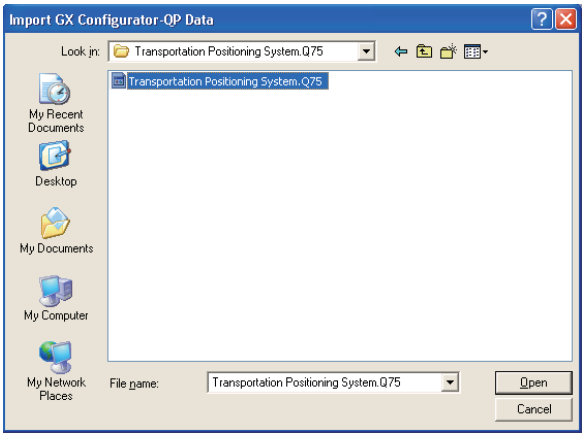
● **Reading applicability by module model**
For QD75M/QD75MH, data can be read only when the module from which data is read and the module selected on the Project view are the same model.
For the QD75/LD75 positioning module other than QD75M/QD75MH, data can be read from the modules whose number of axes is same, even when the module from which data is read and the module selected on the Project view are the different model.

3.5.8 Importing GX Configurator-QP project files

Utilize a project file created in GX Configurator-QP and add a new intelligent function module.

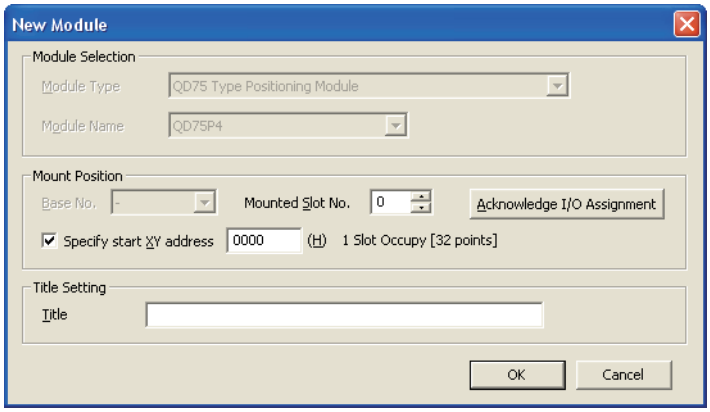
Operating procedure

1. **Select [Project] ⇒ [Open Other Data] ⇒ [Import GX Configurator-QP Data].**
   The Import GX Configurator-QP Data screen is displayed.



2. **Select a project file to be utilized.**

3. **Click the Open button.**
   The New Module screen is displayed.
   ☞ Section 2.1.1



Point

● **Auto refresh**
The setting of auto refresh is not configured when the GX Configurator-QP data are imported, because a GX Configurator-QP project file does not contain the auto refresh data.
Configure the auto refresh setting as necessary.

3.6 Simple Motion Module

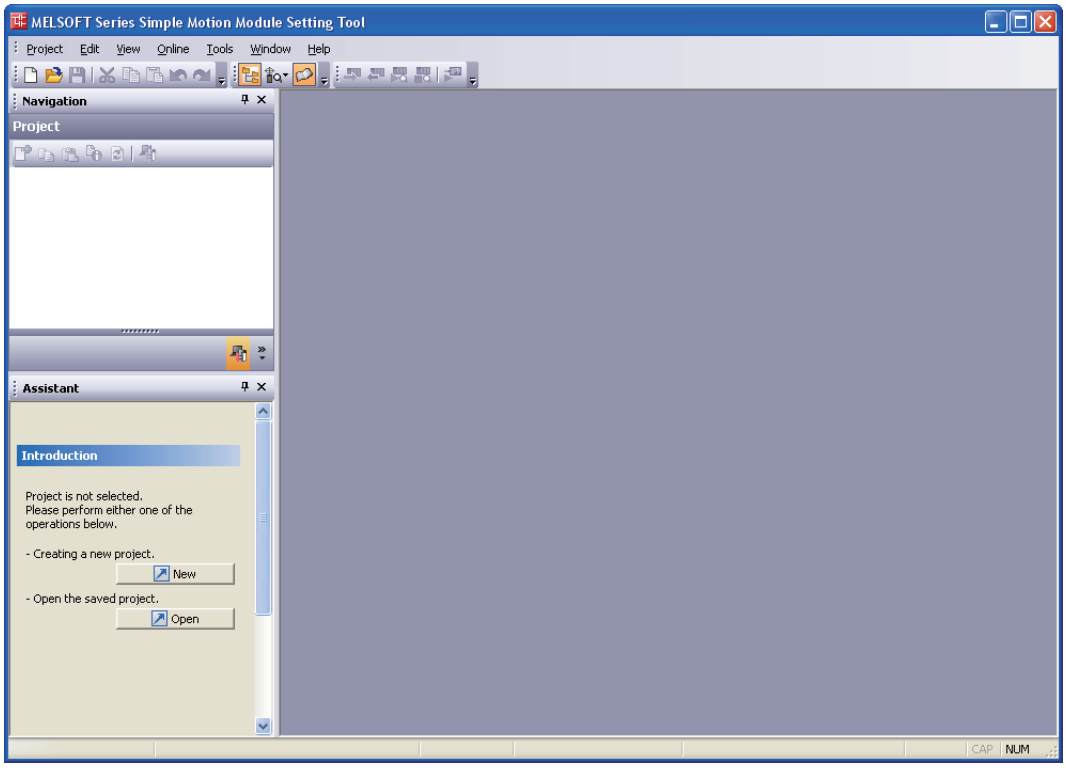
This section explains the operations of the intelligent function module tools related to the simple motion module.

3.6.1 Data setting of simple motion module

Parameters and positioning data of simple motion module are set by the simple motion module setting tool.
For the operating method of simple motion module setting tool, refer to the following manual.
☞ "Help" on the Simple Motion Module Setting Tool

Screen display

Select Project view ⇒ "Intelligent Function Module" ⇒ "(module)", and double-click "Simple Motion Module Setting".



Point

● **Saving simple motion module settings**
The simple motion module settings are managed as a project of simple motion module setting tool.
Therefore, the simple motion module settings are not saved by saving a project of GX Works2.
Save the simple motion module settings with the simple motion module setting tool.

3.7 Serial Communication/Modem Interface Module

This section explains the operations of the intelligent function module tools related to the serial communication module.

3.7.1 Applicable CPUs and Modules

The following table shows CPUs and modules applicable to each function.

Applicable CPU	Applicable module	Circuit trace	Predefined protocol support function
QCPU (Q mode)	QJ71C24, QJ71C24-R2	×	×
	QJ71C24N*1, QJ71C24N-R2*1, QJ71C24N-R4*1	○	○
LCPU	LJ71C24, LJ71C24-R2	○	○

*1 : Use a module of which the function version is B with a serial number of which the first five digits are '10122' or later.

3.7.2 Circuit trace

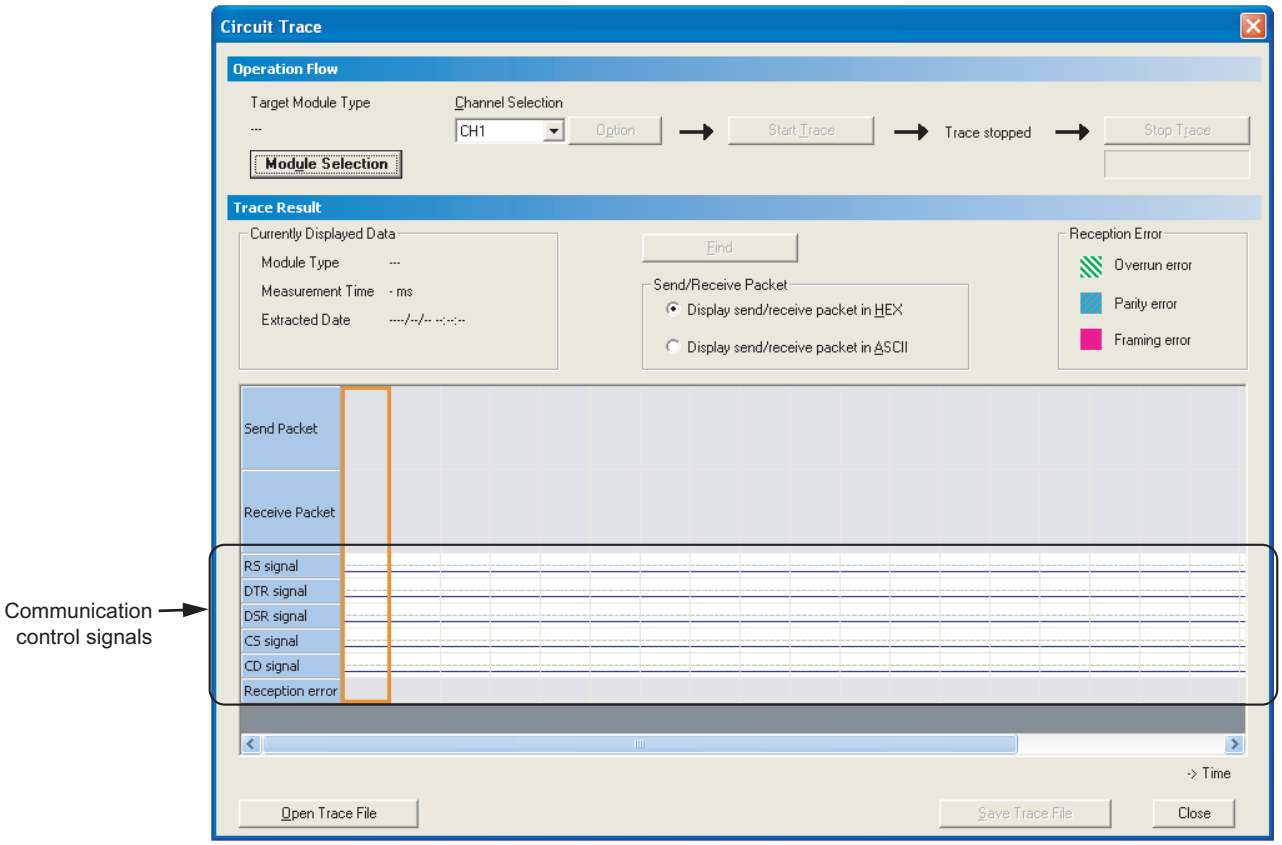
Trace the communication data and communication control signals of the communication with the device controller.
The circuit trace function displays data stored in the monitor buffer of the module.

■ Starting circuit trace

Store the trace data in the monitor buffer to trace the communication data and communication control signal status.

Screen display

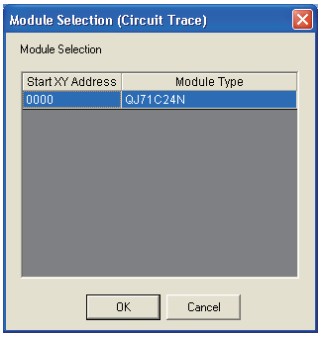
Select [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [Serial Communication Module] ⇒ [Circuit Trace] ( ).



Operating procedure

1. **Click the** Module Selection... **button.**

   The Module Selection (Circuit Trace) screen is displayed.



2. **Select a module to perform the circuit trace, and click the** OK **button.**

3. **Select a channel from "Channel Selection".**

4. **Click the** Start Trace **button.**

   The message shown on the right is displayed.



5. **Click the** Yes **button.**

   The circuit trace is started.

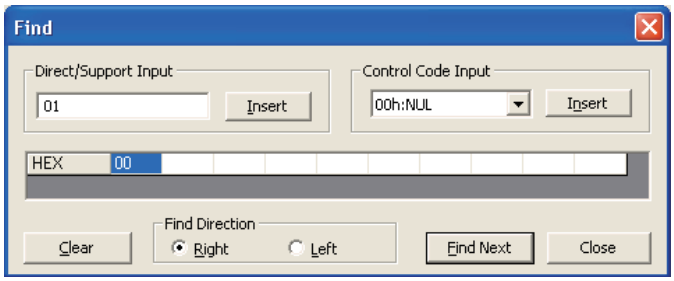
Display contents

Item		Description
Send Packet		Display send data and receive data respectively. For the data display format, the ASCII code or hexadecimal can be selected.
Receive Packet		
Communication control signals		Display the status of the RS/DTR/DSR/CS/CD signal and the receive error.
	RS/DTR/DSR/ CS/CD signal	All signals are displayed with blue lines. When the obtained data does not have signal information, the signal is displayed as an OFF status. **Signal status** / **Display** When signal is ON / ⌐ When signal is OFF / ¬
	Reception error	Display three kinds of errors: errors of overrun error, parity error and framing error.

Screen button

● Find

The Find screen is displayed.

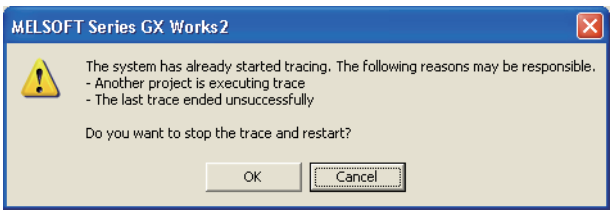


Operation

1. Enter contents to search for in "Direct/Support Input", or select data to search for in "Control Code Input", and click the Insert / Insert.
   Enter contents in "Direct/Support Input" in display format selected in "Send/Receive Packet" on the Circuit Trace screen (Hexadecimal or ASCII characters).
2. Click the Find Next button.
   The cursor moves to the corresponding part of the circuit trace.

Point

● **When the circuit trace has already been executed**
When the circuit trace has already been executed, the following message is displayed.

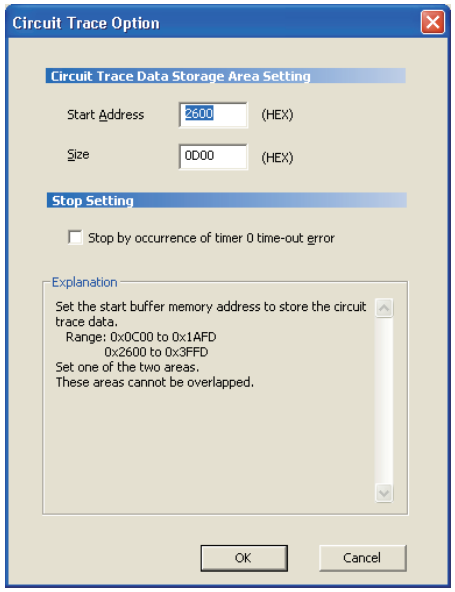


■ Setting circuit trace option

Set the monitor buffer area starting address and size of the module in which the circuit trace data are stored, and the stopping condition.

Screen display

Click the Option... button on the Circuit Trace Option screen.



Operating procedure

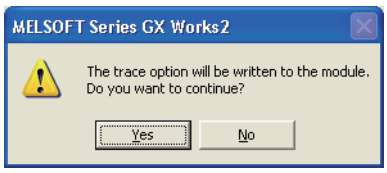
1. **Set the items on the screen.**

Item		Description
Circuit Trace Data Storage Area Setting		-
	Start Address	Set the starting address of the monitor buffer area to which the trace data are stored.
	Size	Set the size of the monitor buffer area to which the trace data are stored. Set the maximum address*1 for the trace data storage space in the range between 2602H to 3FFFH (C02H to 1AFFH for the user-specified area). Note that the range of this value is checked at start of the circuit trace when using the user-specified area.
Stop Setting		-
	Stop by occurrence of timer 0 time-out error	Check this to stop the circuit trace when the timer 0 is timeout.

*1 : The maximum address for the trace data storage space can be calculated by the following formula.
Maximum address for the trace data storage space = "Monitor buffer starting address" + "Monitor buffer size" - 1

2. **Click the OK button.**

The following message is displayed.



3. **Click the Yes button.**

The set values are written to the module.

■ Saving circuit trace result

Save the circuit trace data obtained by the circuit trace to the personal computer.

Operating procedure

- Click the [Save Trace File] button on the Circuit Trace screen.

■ Opening trace files

Read the trace data saved on the personal computer and display the data on the Circuit Trace screen.

Operating procedure

- Click the [Open Trace File] button on the Circuit Trace screen.

3.7.3 Predefined protocol support function

For the predefined protocol support function, refer to Chapter 4.

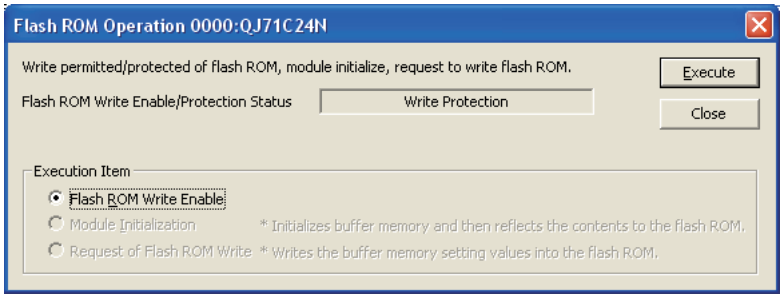
3.7.4 Flash ROM operation

The following explains the flash ROM operation such as permitting/prohibiting data write to the flash ROM of serial communication module.

Operating procedure

1. **Open the intelligent function module data to which the flash ROM operation is performed.**

2. **Select [Tool] ⇒ [Flash ROM Operation].**
   The Flash ROM Operation screen is displayed.



3. **Select an item under "Execution Item", and click the [Execute] button.**
   The selected item is executed.

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4 PREDEFINED PROTOCOL SUPPORT FUNCTION

This chapter explains the operations of the predefined protocol support function of the serial communication module.

4.1 List of Functions of Predefined Protocol Support Function 4-2
4.2 Operating Procedure of Predefined Protocol Support Function . . . 4-3
4.3 Starting and Exiting Predefined Protocol Support Function. 4-4
4.4 Screen Configuration 4-5
4.5 File Operations of Predefined Protocol Support Function 4-7
4.6 Editing Protocols. 4-10
4.7 Setting Packets 4-19
4.8 Writing/Reading/Verifying Protocol Settings 4-31
4.9 Debugging 4-35
4.10 Printing Protocol Settings 4-43

4.1 List of Functions of Predefined Protocol Support Function

This section shows the list of functions of the predefined protocol support function.

File		Reference
New	Create a new protocol setting file.	Section 4.5.1
Open	Open an existing protocol setting file.	Section 4.5.2
Close	Close an open protocol setting file.	Section 4.5.4
Save	Save a protocol setting file.	Section 4.5.3
Save As	Name and saves a protocol setting file.	
Print	Print a protocol setting etc.	Section 4.10
Exit	Exit the predefined protocol support function.	Section 4.3

Edit		Reference
Add Protocol	Add a protocol.	Section 4.6.1
Change to Editable Protocol	Change a protocol selected from the predefined protocol library to an editable one.	Section 4.6.2
Protocol Detailed Setting	Configure the number of retries of a protocol and whether to clear OS area (receive data area) before protocol execution etc.	Section 4.6.3
Add Receive Packet	Add a receive packet.	–
Delete	Delete a protocol.	Section 4.6.5
Copy	Copy a protocol.	–
Paste	Paste a protocol.	
Delete Multiple Protocols	Batch-delete multiple protocols.	
Copy Multiple Protocols	Batch-copy multiple protocols.	
Paste Multiple Protocols	Batch-paste multiple protocols.	
Device Batch Setting	Batch-set devices used in a protocol.	Section 4.7.4
Save User Protocol Library	Save the protocol being set as a user protocol library.	Section 4.6.6

Module Read/Write		Reference
Read from Module	Read protocol settings from a module.	Section 4.8.1
Write to Module	Write registered protocol settings to a module.	
Module Verification	Compare protocol settings being opened with those written in a module.	Section 4.8.2

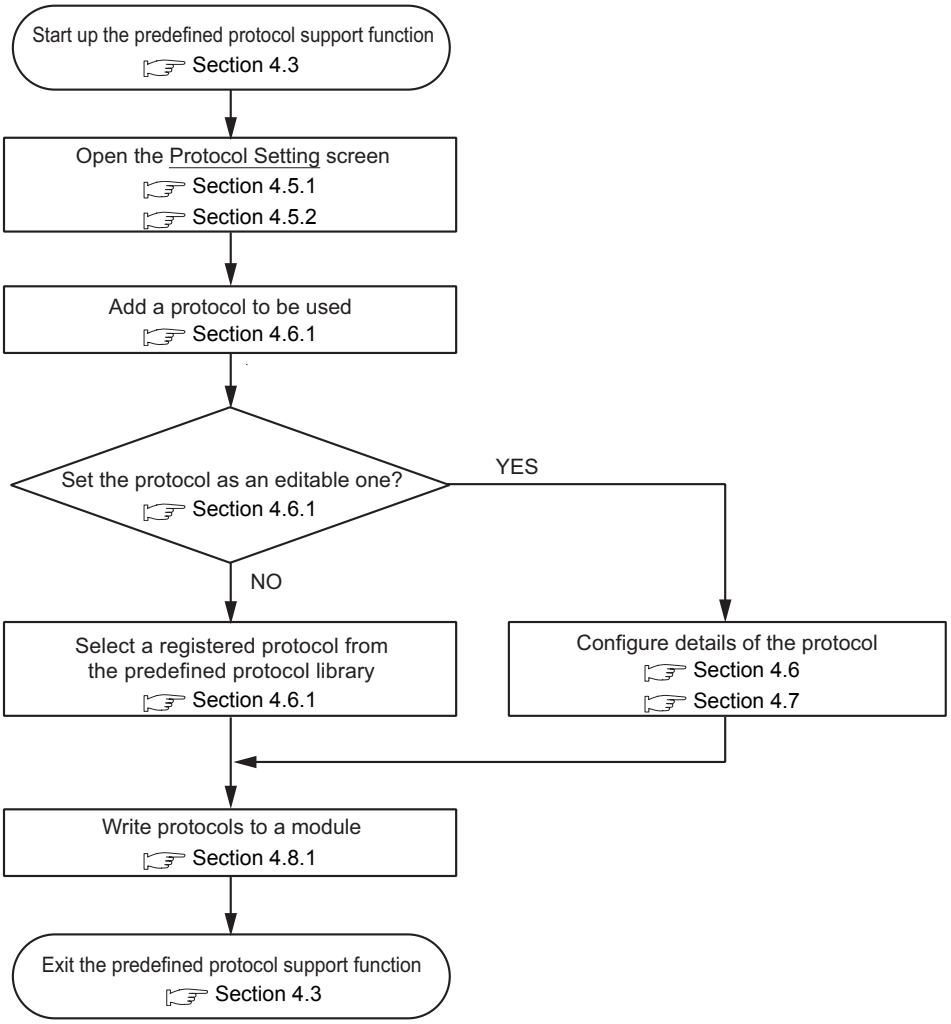
Tool		Reference
Setting Device List	Display the list of devices used in protocols.	Section 4.7.5
Register Predefined Protocol Library	Import the predefined protocol library provided by Mitsubishi Electric Corporation.	Section 4.6.7

Debugging Support Function		Reference
Module Selection	Select a module to be debugged.	Section 4.9.1
Protocol Execution Log	Display the protocol execution logs and the protocol execution results.	Section 4.9.2
State Monitor	Monitor signals, communication error information, operation setting switches, and protocol execution status of the Q series C24N/L series C24 module.	Section 4.9.3

Window		Reference
Cascade	Tile windows in overlapping display.	–
Tile Horizontally	Tile windows horizontally.	
(Switch to other window)	Display the open window.	

4.2 Operating Procedure of Predefined Protocol Support Function

This section shows the operating procedure for writing protocols to the module using the predefined protocol support function.



Point

- **Executing a predefined protocol by a dedicated instruction**
  To execute a predefined protocol, a program to execute the dedicated instruction (CPRTCL instruction) is required. For details of the dedicated instruction, refer to the following manual.
  ☞ User's manual of each module
  When using the dedicated instruction in structured ladder/FBD, refer to the following manual
  ☞ MELSEC-Q/L Structured Programming Manual (Special Instructions)

4.3 Starting and Exiting Predefined Protocol Support Function

This section explains how to start and exit the predefined protocol support function.

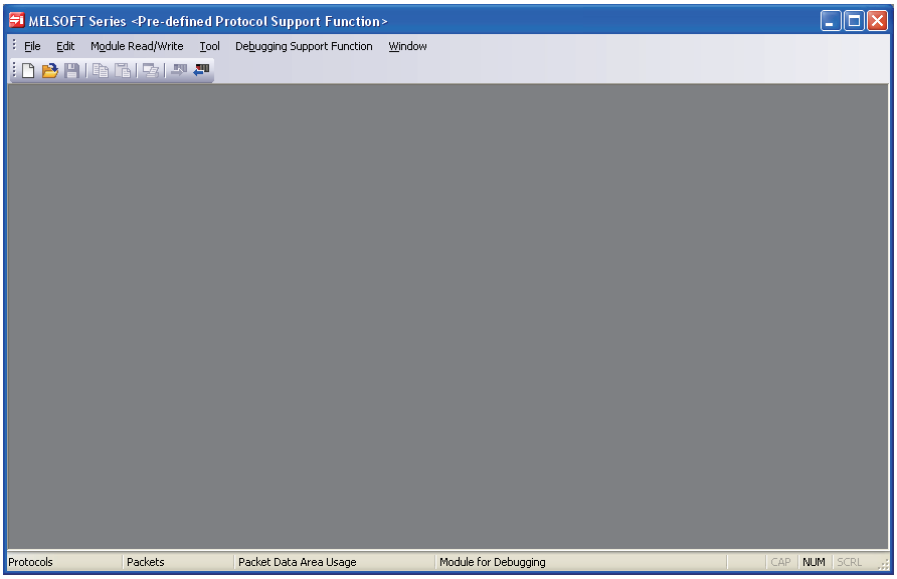
■ Starting up

Start the predefined protocol support function.

Operating procedure

- Select GX Works2 menu [Tool] ⇒ [Intelligent Function Module Tool] ⇒ [Serial Communication Module] ⇒ [Predefined Protocol Support Function].

  The Predefined protocol support function is started up.



■ Exiting

Exit the predefined protocol support function.

Operating procedure

- Select [File] ⇒ [Exit].

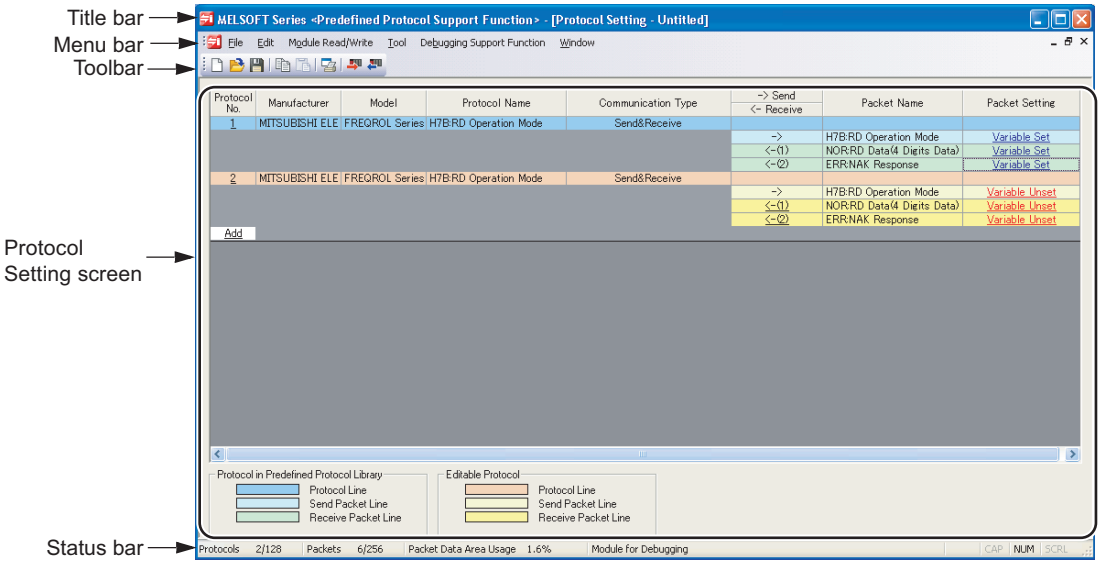
4.4 Screen Configuration

This section explains the main frame (basic screen) of the predefined protocol support function that is displayed when it is started up.

4.4.1 Main frame configuration

The following shows the configuration of the main frame.

Screen display



Display contents

Item	Description	Reference
Title bar	Display a file name.	–
Menu bar	Display menu options for executing each function.	–
Toolbar	Display tool buttons for executing each function.	–
Protocol Setting screen	A sub screen to configure/change protocols to be set to a module.	Section 4.5
Status bar	Display information about a protocol being edited.	Section 4.4.2

4.4.2 Status bar

The status bar displays information about a protocol being edited at the bottom of the screen.



Protocols	Packets	Packet Data Area Usage	Module for Debugging	Caps Lock	Num Lock	Scroll Lock

The following shows the information to be displayed.

Item	Description
Protocols	Display the number of registered protocols.
Packets	Display the number of registered packets.
Packet Data Area Usage	Display the percentage of the size of packet data being registered in the maximum registrable area of the packet data area (flash ROM area in a module to store packet data for communication with other devices).
Module for Debugging	Display the module name, IO address, and channel of a debugging object module being selected.
Caps Lock	Display the effective status of the Caps Lock.
Num Lock	Display the effective status of the Num Lock.
Scroll Lock	Display the effective status of the Scroll Lock.

4.5 File Operations of Predefined Protocol Support Function

This section explains the basic file operations of the predefined protocol support function, such as creating new files, opening files, and saving files.

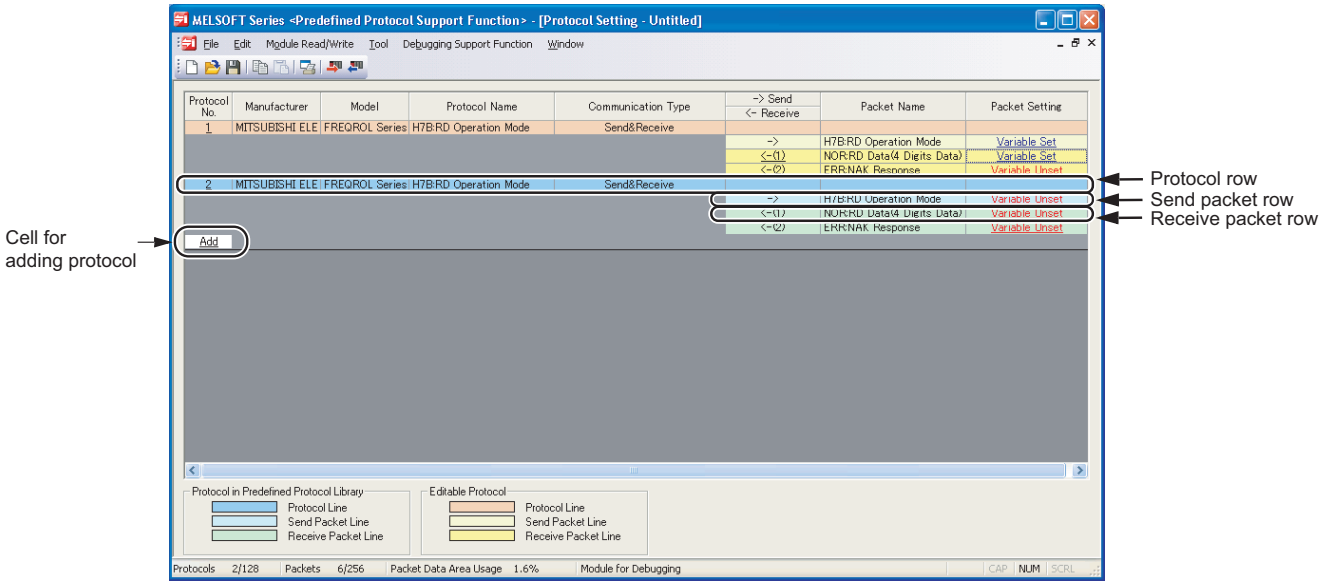
4.5.1 Creating files

Create a new file of the protocol setting.

Operating procedure

- Select [File] ⇒ [New] ( ).

  The Protocol Setting screen is displayed.



Display contents

Item	Description
Protocol No.	Display the protocol number to be used in a pre-defined protocol dedicated instruction for ladder programs. The protocol number can be changed by selecting a number from the list. The assignable number is 1 to 128.
Manufacturer	Display the manufacturer's name of a target device of a protocol to be set.
Model	Display the target model of a protocol to be set.
Protocol Name	Display the name of a protocol to be set.
Communication Type	Display the communication type in a protocol to be set. Send Only : Send one send packet once. Receive Only : Receive a packet if it matches any of up-to-16 defined receive packets. Send&Receive : Send one send packet, and receives a packet if it matches any of up-to-16 defined receive packets.
-> Send/<- Receive	Display the packet direction. -> : Send <-(1) to <-(16) : Receive A receive packet number is displayed in ().
Packet Name	Display the packet name.
Packet Setting	Display the existence or non-existence of variables in an element, and set or unset of the variables. With 'Variable Unset', 'Element Unset', or 'Element error', the setting cannot be written to a module. No Variable : There is no variable in the element. Variable Set (in blue) : All variables are set. Variable Unset (in red) : There are one or more unset variables. Element Unset (in red) : There is no element in the editable protocol. Element error (in red) : The element does not meet requirement.
Protocol row	One protocol row is displayed for each protocol. The background is displayed in the following colors. Deep sky blue : Protocol selected from the predefined protocol library Orange : Editable protocol
Send packet row	One send packet row is displayed for each send packet. ('Send' means the communication toward an external device from a module.) The background is displayed in the following colors. Light sky blue : Protocol selected from the predefined protocol library Light yellow : Editable protocol
Receive packet row	One receive packet row is displayed for each receive packet. ('Receive' means the communication toward a module from an external device.) The background is displayed in the following colors. Pale green : Protocol selected from the predefined protocol library Yellow : Editable protocol
Cell for adding protocol	Display the Add Protocol screen by clicking this cell or pressing the Enter key.

4.5.2 Opening files

Read a protocol setting file saved in the hard disk or other memory media of a personal computer.

Operating procedure

1. **Select [File] ⇒ [Open] ( ).**
   The Open screen is displayed.

2. **Select a protocol setting file (*.pcf) and open the file.**
   The Protocol Setting screen is displayed.

4.5.3 Saving files

Save a protocol setting being edited in the hard disk or other memory media of a personal computer.

■ Saving protocol settings under the specified name

Save a protocol setting being edited under the specified name.

Operating procedure

1. **Select [File] ⇒ [Save As].**
   The Save As screen is displayed.

2. **Set "Save in" and "File name" and save the file.**
   The file is saved with the specified name and in the specified destination.

■ Saving protocol settings

Overwrite and save a protocol setting being edited.

Operating procedure

- Select [File] ⇒ [Save] ( ).
  The data to be saved is overwritten on the existing protocol setting file.

4.5.4 Closing files

Close a protocol setting being opened.

Operating procedure

- [File] ⇒ [Close].

4.6 Editing Protocols

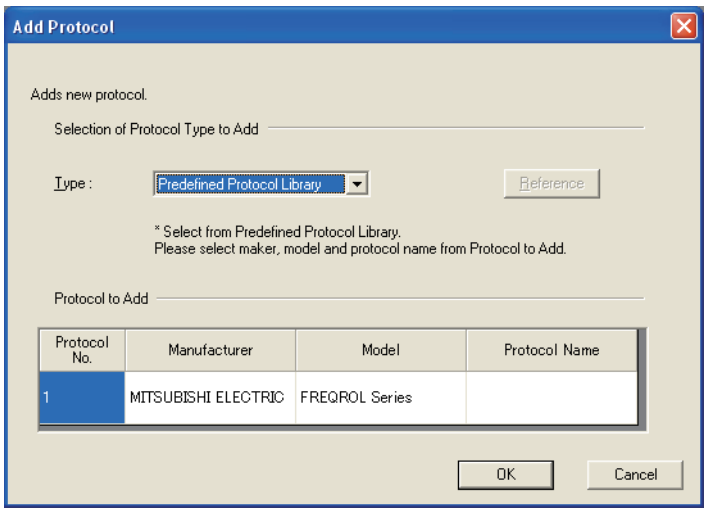
This section explains how to configure/change protocols to be set to a module on the Protocol Setting screen.

4.6.1 Adding protocols

Add a protocol.

Screen display

Click the "Add" cell, or press the Enter key on the Protocol Setting screen.



Operating procedure

- Set the items on the screen.

Item		Description
Selection of Protocol Type to Add		-
	Type	Select a protocol type to be added. For "User Protocol Library", click the Reference button and specify the file of user protocol library. (☞ ■Protocol type)
Protocol to Add		-
	Protocol No.	Set the number of the protocol to be added.
	Manufacturer	Set a manufacturer's name of the protocol to be added.
	Model	Set a model of the protocol to be added.
	Protocol Name	Set a name of the protocol to be added.

Point

● **"Select from Predefined Protocol Library"**
When "Select from Predefined Protocol Library" is selected, configure only "Send/Receive Data Storage Area" in a Non-conversion Variable/Conversion Variable among packet elements.

■ Protocol type

The following shows the 3 types of the protocol types.

Item	Description
Predefined Protocol Library	Add a protocol by selecting a protocol from the predefined protocol library and specifying "Protocol No.", "Manufacturer", "Model", and "Protocol Name".
User Protocol Library	Add a protocol by utilizing a protocol saved as a user protocol library. (Saving protocols as user protocol library ☞ Section 4.6.6)
Add New (Editable Protocol)	Add a protocol which can be edited by specifying only "Protocol No.". "Manufacturer", "Model", and "Protocol Name" can be changed after a protocol addition.

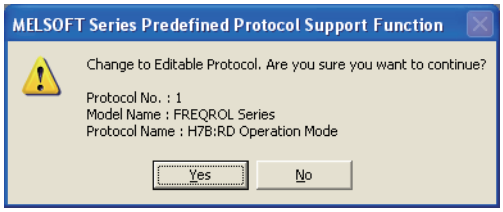
4.6.2 Changing to editable protocols

Change a protocol selected from the predefined protocol library to an editable one.

Operating procedure

1. **Select a row of a protocol to be changed on the Protocol Setting screen.**

2. **Select [Edit] ⇒ [Change to Editable Protocol].**
   The following message is displayed.



3. **Click the Yes button.**

Point

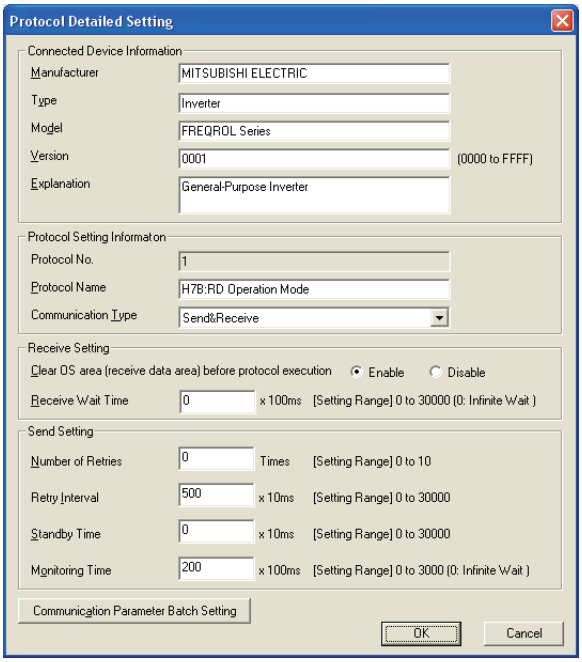
● **Restriction on changing a predefined protocol to an editable protocol**
Once a protocol has been changed to an editable protocol, it cannot be restored.
In addition, an editable protocol cannot be changed to a predefined protocol.

4.6.3 Configuring details of protocols

Configure the number of retries of a protocol and whether to clear the OS area (receive data area).

Screen display

Select a protocol row on the Protocol Setting screen and select [Edit] ⇒ [Protocol Detailed Setting].



Operating procedure

- Set the items on the screen.

Item		Description
Connected Device Information*1	Manufacturer	Set a manufacturer's name of the protocol.
	Type	Set a device type of the protocol.
	Model	Set a model of the protocol.
	Version	Set a device version of the protocol.
	Explanation	Set a description for a device of the protocol.
Protocol Setting Information*1	Protocol No.	Displays a protocol number of the selected protocol.
	Protocol Name	Set a protocol name of the protocol.
	Communication Type	Select a communication type of the protocol.
Receive Setting	Clear OS area (receive data area) before protocol execution	Select whether to clear the OS area (receive data area) of the Q series C24N/L series C24 module before the protocol execution. If 'Disable' is selected, the data received in the Q series C24N/L series C24 module before the protocol execution also become a receive target of the protocol.
	Receive Wait Time	Set waiting time after the Q series C24N/L series C24 module turns to the 'waiting for reception' status. If the communication with other devices is not available due to a cable disconnection etc. and no matched packet can be received within the set time, the Q series C24N/L series C24 module determines an error and cancels the 'waiting for reception' status.

Item		Description
Send Setting	Number of Retries	Set the number of times the Q series C24N/L series C24 module retries to send when the sending from the Q series C24N/L series C24 module has not been completed within the set time of "Monitoring Time". The Q series C24N/L series C24 module determines an error if the sending has not been completed despite the specified number of times of sending retries.
	Retry Interval	Set the interval between the failure of sending from the Q series C24N/L series C24 module and the retry when the sending from the Q series C24N/L series C24 module has not been completed within the set time of "Monitoring Time".
	Standby Time	Set standby time between when a protocol set to the Q series C24N/L series C24 module turns to the execution status and when it actually sends the data. By setting this item, the send timing of the Q series C24N/L series C24 module can be adjusted to readiness of other devices to receive data.
	Monitoring Time	Set waiting time between when the Q series C24N/L series C24 module turns to the 'sending' status and when the sending is completed. If the communication with other devices is not available due to a cable disconnection etc. and the sending cannot be completed within the set time, the Q series C24N/L series C24 module determines an error and cancels the 'sending' status.

*1 : For a protocol selected from the predefined protocol library, "Connected Device Information" and "Protocol Setting Information" cannot be modified.

Screen button

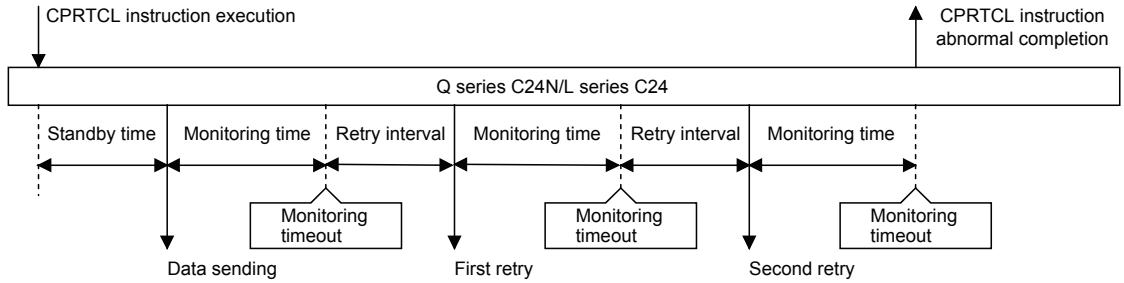
● Communication Parameter Batch Setting

Displays the Communication Parameter Batch Setting screen. (☞ Section 4.6.4)

Point

● **Example of when the data cannot be sent**

When the set value of "Number of Retries" is 2, the Q series C24N/L series C24 module determines an error at the following timing if it cannot send the data.

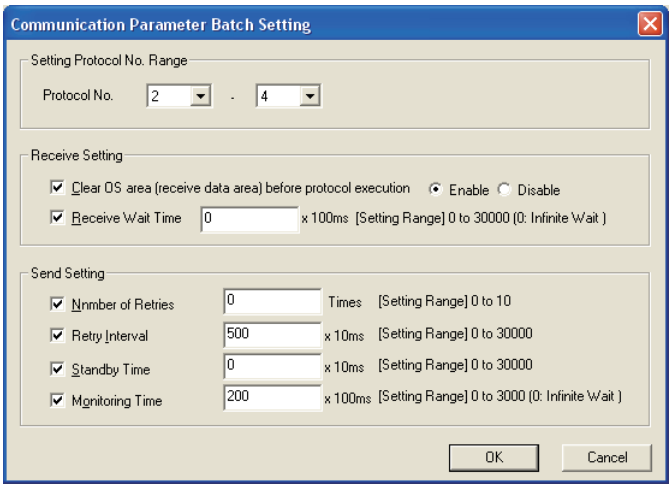


4.6.4 Setting send/receive parameters in batch

Configure parameters used for sending/receiving a protocol.

Screen display

Click the Communication Parameter Batch Setting button on the Protocol Detailed Setting screen.



Operating procedure

- Set the items on the screen.

Item	Description
Setting Protocol No. Range	Select the start number and end number of the range of protocols to be set at once.
Receive Setting	Check items to be set at once. Specified values of selected items are to be set at once.
Send Setting	

4.6.5 Deleting protocols/packets

Delete a protocol/packet.

Operating procedure

1. **Select a row of a protocol/packet to be deleted on the Protocol Setting screen.**

2. **Select [Edit] ⇒ [Delete], or press the Delete key.**
   The row of the protocol/packet is deleted.

Point

● **Deleting protocols/packets**
- To delete multiple protocols at once, select [Edit] ⇒ [Delete Multiple Protocols] and specify the range.
- A send packet cannot be deleted.
- A receive packet cannot be deleted when the communication type is "Send&Receive" or "Receive Only" and there is only one receive packet.
- A packet in a protocol selected from the predefined protocol library cannot be deleted.

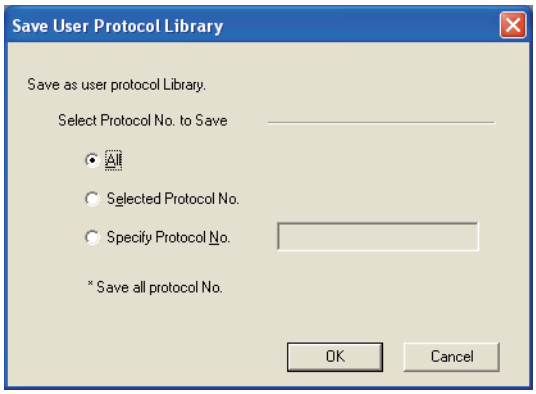
4.6.6 Saving protocols as user protocol library

Save a protocol being set as a user protocol library.

Operating procedure

1. **Select a cell of a protocol line on the Protocol Setting screen.**

2. **Select [Edit] ⇒ [Save User Protocol Library]**
   The Save User Protocol Library screen is displayed.

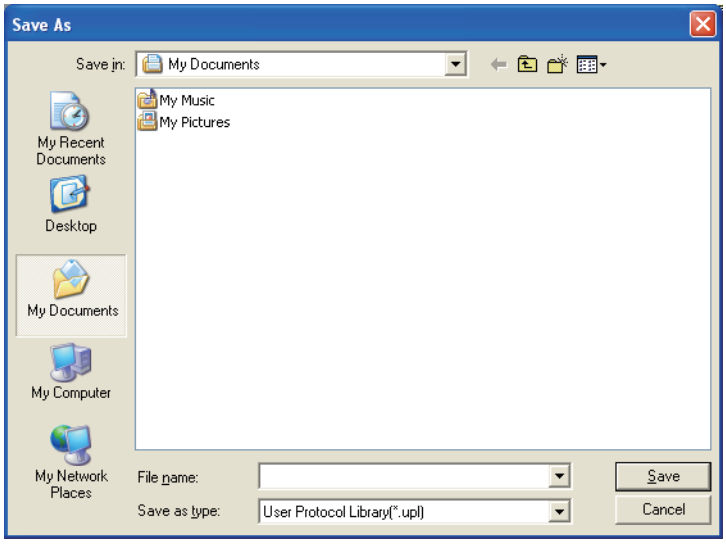


3. Set the items on the screen.

Item	Description
ALL	Select this to save all protocols.
Selected Protocol No.	Select this to save a protocol of protocol number being selected.
Specify Protocol No.	Select this to save a protocol by specifying a protocol number. For specifying multiple protocol numbers, separate each protocol number with ",". For specifying consecutive protocol numbers, connect the first protocol number and last protocol number with "-".

4. Click the [OK] button.

The Save As screen is displayed.



5. Enter a file name and click the [Save...] button.

Saved as a user protocol library.

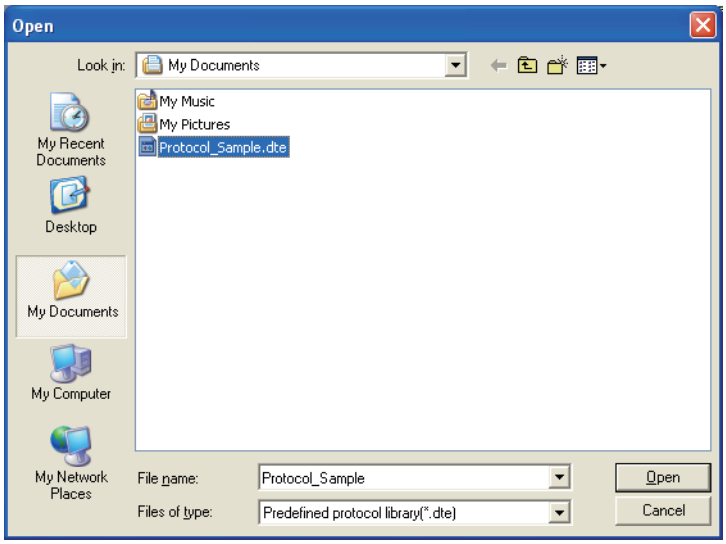
4.6.7 Registering predefined protocol library

Register the predefined protocol library provided by Mitsubishi Electric Corporation.
Registering the predefined protocol library enables to select the predefined protocol library which is registered on "Predefined Protocol Library" of the Add Protocol screen.

Operating procedure

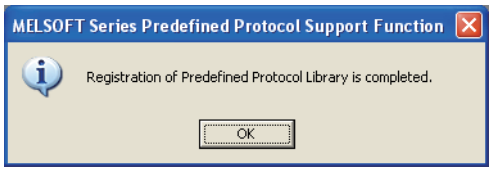
1. **Select [Edit] ⇒ [Register Predefined Protocol Library].**

   The Open screen is displayed.



2. **Select a file name and click the Open button.**

   After the registration is completed, the following message is displayed.

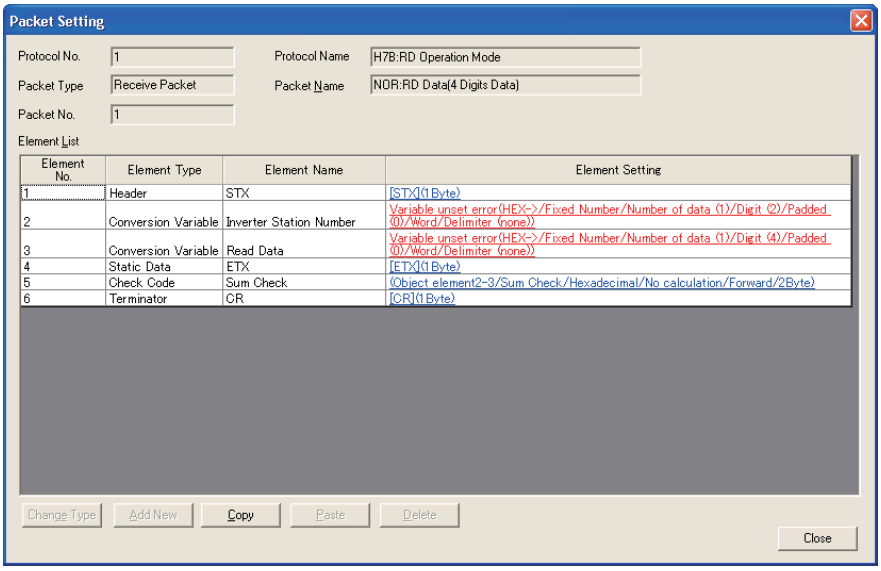


4.7 Setting Packets

Set packet elements of a registered protocol.

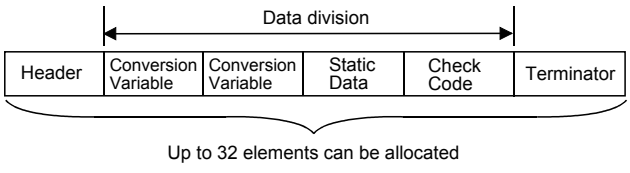
Screen display

Click a desired packet setting on the Protocol Setting screen.



Operating procedure

- Set the items on the screen.

Item		Description
Protocol No.		Display the protocol number of the specified protocol.
Protocol Name		Display the protocol name of the specified protocol.
Packet Type		Display 'Send Packet' or 'Receive Packet' as the type of the specified packet.
Packet Name		Set the packet name of the specified packet.*1
Packet No. (Receive packet only)		Display the packet number of the receive packet.
Element List	Element No.	Display the number of the packet element. The element number can be changed by selecting a number from the list.
	Element Type	Display the type of each element. For details, refer to the user's manual of the module. 
	Element Name	Display the name of each element.
	Element Setting	Display the setting outline of each element. For details, refer to "■ Display examples of element settings" in this section. Display contents may vary depending on types of elements. To display the respective setting screen, click an editable cell*2, or press the Enter key.

*1 : Not editable for a protocol selected from the predefined protocol library.

*2 : Displayed in red when a Variable unset error, Element error, or Calculating range error occurs, and displayed in blue when no error occurs.

Screen button

● Change Type

Changes the type of the packet element. (Section 4.7.3)

● Add New

Adds a new packet element. (Section 4.7.1)

● Copy

Copies the packet element at the cursor position.

● Paste

Pastes the copied packet element to the row next to the cursor position.

● Delete

Deletes the packet element at the cursor position.

■ Display examples of element settings

Element type	Display content		Display example
Header Static Data Terminator	"Code Type" is 'ASCII String'	Display the set value (ASCII string) with " ", and data length with ( ).	"TEXT"(4Byte)
	"Code Type" is 'ASCII Control Code'	Display the set value (ASCII control code) with [ ], and data length with ( ).	[CR](1Byte)
	"Code Type" is 'HEX'	Display the set value (HEX), and data length with ( ).	1AB2C3(3Byte)
Length	Range for calculation of data length		Object element3-8
	Display the code type using elliptical expressions. ASCII Hexadecimal : Hexadecimal ASCII Decimal : Decimal HEX : HEX		Hexadecimal
	Display the data flow using elliptical expressions. Forward Direction (Upper Byte -> Lower Byte) : Forward Reverse Direction (Lower Byte -> Upper Byte) : Reverse Byte Swap (by Word) : Byte		Forward
	Data size		2Byte
Non-conversion Variable	For 'Fixed Length', display the address range of a device or buffer to be specified as a variable with [ ]. For 'Variable Length', additionally display the starting address of a device or buffer memory which specifies the data length (or number of data) with another [ ].		Fixed Length: [D1-D2] Variable Length: [D1] [D2-D11]
	Fixed length/Variable length		Fixed Length
	Length of send/receive data		600Byte
	Displays the unit of stored data using elliptical expressions. Lower Byte + Upper Byte : Lower/Upper Byte Lower Bytes Only : Lower Byte		Lower/Upper Byte
	Displays the byte swap using elliptical expressions. Disable (Lower -> Upper) : No Swap Enable (Upper -> Lower) : Swap		Swap

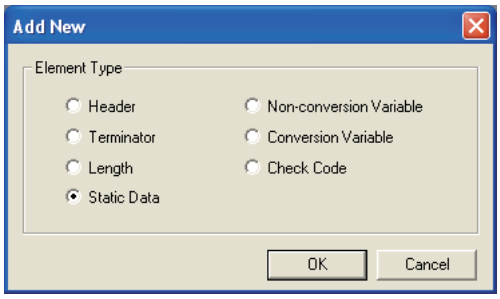
Element type	Display content	Display example
Conversion Variable	For 'Fixed Number of Data', display the address range of a device or buffer to be specified as a variable with [ ]. For 'Variable Number of Data', additionally display the starting address of a device or buffer memory which specifies the data length with another [ ].	Fixed Number of Data: [D1-D2] Variable Number of Data: [D1] [D2-D11]
	Display "Conversion" using elliptical expressions. HEX -> ASCII Decimal : -> Dec HEX -> ASCII Hexadecimal : -> Hex ASCII Decimal -> HEX : Dec ->
 ASCII Hexadecimal -> HEX : Hex ->	-> Hex
	Fixed number of data/Variable number of data	Variable Number
	Display "Number of data" using elliptical expressions.	Number of data (3)
	Number of digits of data	Digit (3)
	Display a blank-padded character (0/Space).	Padded (0)
	Display the conversion unit using elliptical expressions. Word : Word Double Word : Double	Double
	Display whether signed or not. Unsigned Signed	Signed
	When 'Signed' is selected in "Sign", display the sign character using elliptical expressions. None : none + : + 0 : 0 Space :space	Sign character (none)
	Display the number of decimals using elliptical expressions.	Decimal point (5)
	Display the delimiter using elliptical expression. No Delimiter : none Comma : comma Space : space	Delimiter (comma)
Check Code	Range for calculation of a check code	Object element2-7
	Display the processing method using elliptical expressions. Horizontal Parity : Parity Sum Check : Sum check 16-bit CRC (for MODBUS) : CRC MOD	Parity
	Display "Code Type" using elliptical expressions. ASCII Hexadecimal : Hexadecimal ASCII Decimal : Decimal HEX : HEX	Hexadecimal
	Display the complement calculation using elliptical expressions. No Complement Calculation : No calculation One's Complement : 1 complement Two's Complement : 2 complement	1 complement
	Display the data flow using elliptical expressions. Forward Direction (Upper Byte -> Lower Byte) : Forward Reverse Direction (Lower Byte -> Upper Byte) : Reverse Byte Swap (by Word) : Byte	Forward
	Data size	2Byte
Non-verified Reception (Receive only)	Display the check size with ( ). ("Variable" is displayed when the set value is '0'.)	(123Byte)

4.7.1 Adding new elements

Add an element.

Screen button

Click the Add New button on the Packet Setting screen.



Operating procedure

- Select "Element Type" and click the OK button.
  The Element Setting screen for the selected element type is displayed.
  For details, refer to Section 4.7.2.

4.7.2 Setting elements

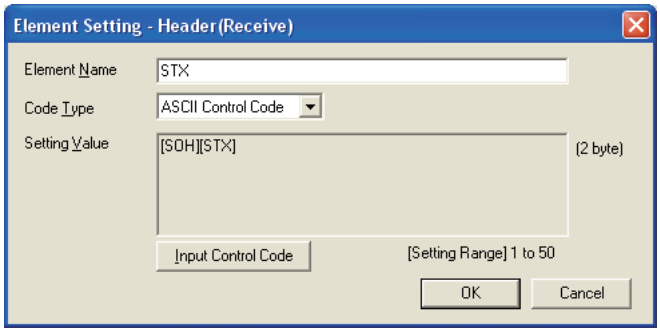
Set each element.

■ Setting of header/static data/terminator

Configure the header/static data/terminator setting.

Screen display

Select "Header"/"Static Data"/"Terminator" on the Add New screen.



Operating procedure

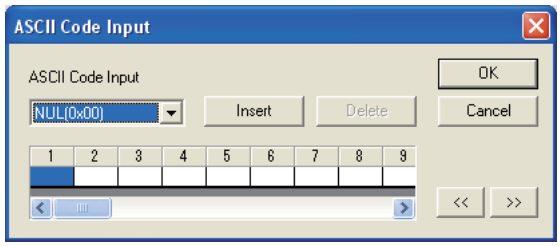
- Set the items on the screen.

Item	Description
Element Name	Set a name of the element.
Code Type	Set a data type of the setting value.
Setting Value	Set value of the Header/Static Data/Terminator.

Screen button

● Input Control Code

When "Code Type" is 'ASCII Control Code', input a control code to be set on the ASCII Code Input screen.



Operation

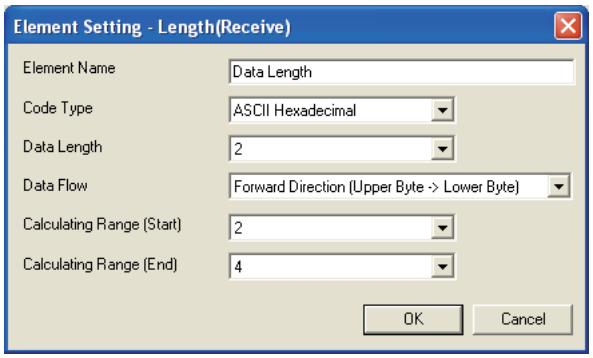
1. Select an ASCII code from the list of "ASCII Code Input".
2. Click the Insert button.
   The ASCII code is inserted to the cursor position.

■ Setting of length

Configure the length setting.

Screen display

Select "Length" on the Add New screen.



Operating procedure

- Set the items on the screen.

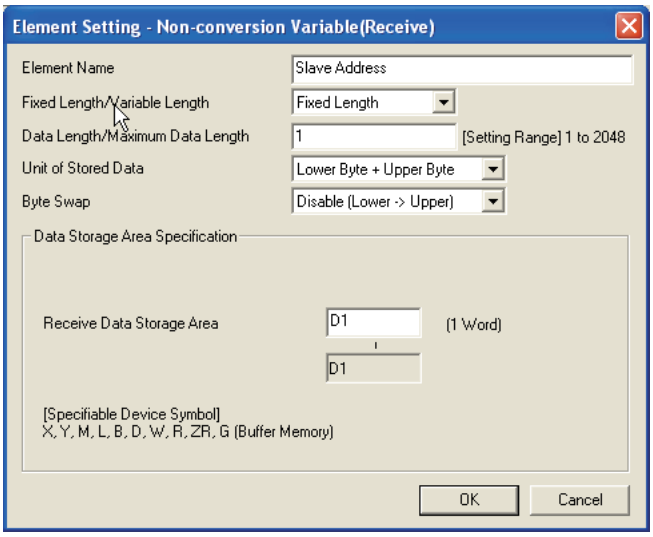
Item	Description
Element Name	Set a name of the element.
Code Type	Set a data type of the setting value.
Data Length	Select the data length on the line.
Data Flow	Select the sequence of data when "Data Length" is other than '1'.
Calculating Range (Start)/ Calculating Range (End)	Select element numbers for the start and end of the calculating range.

■ Setting of non-conversion variable

Configure the non-conversion variable setting.

Screen display

Select "Non-conversion Variable" on the Add New screen.



Operating procedure

- Set the items on the screen.

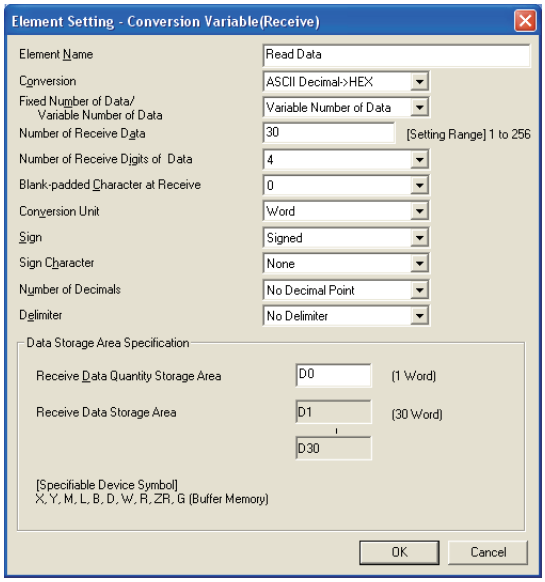
Item	Description
Element Name	Set a name of the element.
Fixed Length/Variable Length	Select 'Fixed Length'/'Variable Length'.
Data Length/ Maximum Data Length	Set the data length. For 'Variable Length', set the maximum data length that can be specified to the data storage area.
Unit of Stored Data	Select 'Lower Byte + Upper Byte'/'Lower Bytes Only'.
Byte Swap	Select 'Disable (Lower -> Upper)'/'Enable (Upper -> Lower)'.
Send (Receive) Data Length Storage Area (For 'Variable Length' only)	Set a starting address of devices in which the data length of the send (receive) data of the element is stored.
Send (Receive) Data Storage Area	Fixed Length : Set a starting address of devices in which the value of a variable is stored. An ending address is automatically displayed. Variable Length : According to the setting of the data storage area for the send (receive) area, automatically displays a starting address and ending address of devices in which the value of a variable is stored.

■ Setting of conversion variable

Configure the conversion variable.

Screen display

Select "Conversion Variable" on the Add New screen.



Operating procedure

- Set the items on the screen.

Item	Description
Element Name	Set a name of the element.
Conversion	Select a conversion type.
Fixed Number of Data/ Variable Number of Data	Select 'Fixed Number of Data'/'Variable Number of Data'.
Number of Send (Receive) Data	Set the number of the data (1 to 256). For 'Variable Number of Data', set the maximum number of data that can be specified to the data number storage area.
Number of Send (Receive) Digits of Data	Select 1 to 10 or 'Variable Number of Digits'.
Blank-padded Character at Send (Receive)	Select 'Space'/'0'. The setting value is invalidated and '-' is displayed when "Number of Send (Receive) Digits of Data" is 'Variable Number of Digits'.
Conversion Unit	Select 'Word'/'Double Word'.
Sign	Select 'Unsigned'/'Signed'.*1
Sign Character	Select 'None'/'+'/'0'/'Space' when "Sign" is 'Signed'.
Number of Decimals	Select 'No Decimal Point'/1 to 9/'Variable Point'.*1
Delimiter	Select 'No Delimiter'/'Comma'/'Space'.
Send (Receive) Data Quantity Storage Area (For Variable Number of Data only)	Specify a starting address of devices in which the number of the send (receive) data of the element is stored.*2
Send (receive) data storage area	Fixed Length : Specify a starting address of devices in which the value of a variable is stored.*2 An ending address is automatically displayed. Variable Length : According to the setting of the data storage area for the send (receive) area, automatically displays a starting address and ending address of devices in which the value of a variable is stored.

*1 : Settable only when "Conversion" is 'HEX -> ASCII Decimal' or 'ASCII Decimal -> HEX'.

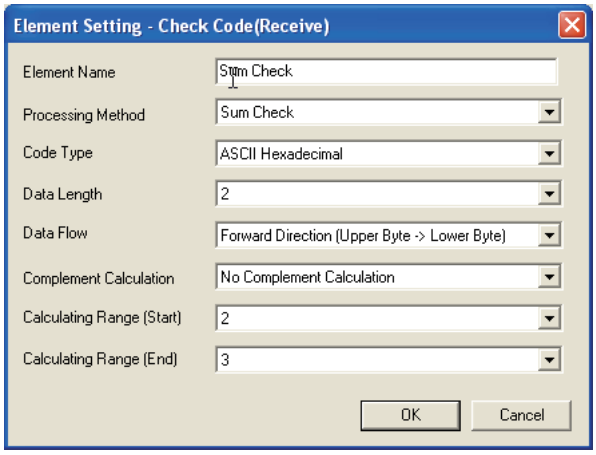
*2 : For the setting range, refer to ■ List of available devices for "Send (Receive) Data Storage Area".

■ Setting of check code

Configure the check code setting.

Screen display

Select "Check Code" on the Add New screen.



Operating procedure

- Set the items on the screen.

Item	Description
Element Name	Set a name of the element.
Processing Method	Select a calculating method.
Code Type*1	Select a send/receive format of the check code.
Data Length*1	Select the data length on the line.
Data Flow*1	Select the sequence of data when "Data Length" is other than '1'.
Complement Calculation*1	Select a type of complement calculation.
Calculating Range (Start)/Calculating Range (End)	Select element numbers for the start and end of the calculating range.

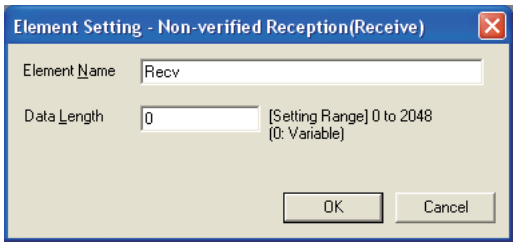
*1 : Not settable when "Processing Method" is '16-bit CRC (for MODBUS)'.

■ Setting of non-verified reception

Configure the non-verified reception setting.

Screen display

Select "Non-verified Reception" on the Add New screen.



Operating procedure

- Set the items on the screen.

Item	Description
Element Name	Set a name of the element.
Data Length	Set the number of characters not to be verified.

■ List of available devices for "Send (Receive) Data Storage Area"

The following list shows the available devices for "Send (Receive) Data Storage Area".

● QCPU (Q mode)

Category	Device type	Symbol	Device range				
			Other than those mentioned right	Basic model QCPU	Universal model QCPU (except for Q00UJ/Q00U/Q01U)	Q00U/Q01U	Q00UJ
Internal user*1,*2	Input	X	0 to 1FFFH	0 to 7FFH	0 to 1FFFH	0 to 1FFFH	0 to 1FFFH
	Output	Y	0 to 1FFFH	0 to 7FFH	0 to 1FFFH	0 to 1FFFH	0 to 1FFFH
	Internal relay	M	0 to 32767	0 to 32767	0 to 61439	0 to 61439	0 to 61439
	Latch relay	L	0 to 32767				
	Link relay	B	0 to 7FFFH	0 to 7FFFH	0 to EFFFH	0 to EFFFH	0 to EFFFH
	Data register	D	0 to 32767	0 to 32767	0 to 4212735	0 to 94207	0 to 32767
	Link register	W	0 to 7FFFH	0 to 7FFFH	0 to 4047FFH	0 to 16FFFH	0 to 7FFFH
File register	File register	R*2	0 to 32767	0 to 32767	0 to 32767	0 to 32767	–
		ZR	0 to 1042431	0 to 1042431	0 to 4184063	0 to 65535	–
Buffer memory	Intelligent function module device	U□\G□	1024 to 6911, 9728 to 16383, 20480 to 24575				

*1 : Do not specify a local device.

*2 : Specify devices within the range specified in the Device setting of the PLC parameter.

● LCPU

Category	Device type	Symbol	Device range	
			L02/L02-P	L26-BT/L26-PBT
Internal user*1,*2	Input	X	0 to 1FFFH	
	Output	Y	0 to 1FFFH	
	Internal relay	M	0 to 61439	
	Latch relay	L	0 to 32767	
	Link relay	B	0 to EFFFH	
	Data register	D	0 to 94207	0 to 421887
	Link register	W	0 to 16FFFH	0 to 66FFFH
File register	File register	R*2	0 to 32767	
		ZR	0 to 65535	0 to 393215
Buffer memory	Intelligent function module device	U□\G□	1024 to 6911, 9728 to 16383, 20480 to 24575	

*1 : Do not specify a local device.

*2 : Specify devices within the range specified in the Device setting of the PLC parameter.

Point

● **CPU device**
When a CPU device is specified as the data storage area, the Q series C24N/L series C24 module performs the read/write CPU device process.
If the total length of variables used in a packet exceeds 1920 bytes, 'read CPU device process'/'write CPU device process' of the Q series C24N/L series C24 module needs to be performed more than once, and the processing time might be longer.

● **Intelligent function module device (buffer memory)**
High-speed protocol processing is available because a Intelligent function module device (buffer memory) is not affected by the sequence scan of a programmable controller CPU.

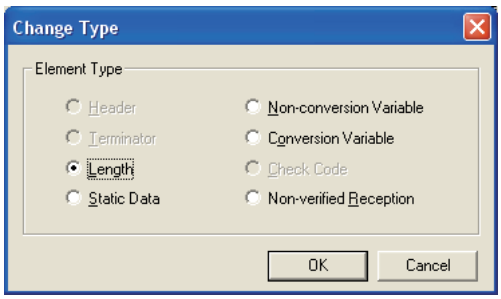
● **Execution of a protocol including a Non-conversion Variable or Conversion Variable**
When executing a protocol including a Non-conversion Variable or Conversion Variable, do not change the value of a CPU device specified as a variable during execution of the dedicated instruction.

4.7.3 Changing element types

Change a type of an element to another.

Screen display

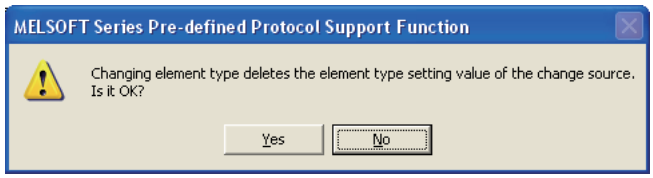
Select a cell of an element to be changed on the Packet Setting screen and click the Change Type button.



Operating procedure

1. **Select a new element type and click the [OK] button.**

   The following message is displayed.



2. **Click the [Yes] button.**

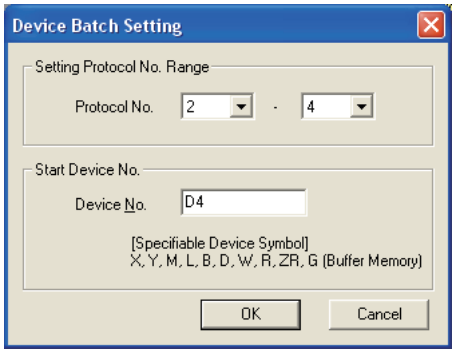
   The element setting screen for the selected element type is displayed.

4.7.4 Batch-setting devices

Batch-set devices used in protocols.

Screen display

Select [Edit] ⇒ [Device Batch Setting].



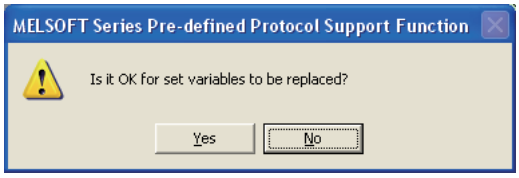
Operating procedure

1. **Set the items on the screen.**

Item	Description
Setting Protocol No. Range	Select a starting number and ending number of protocols to be batch-set.
Start Device No.	Select a starting number of devices to be batch-set.

2. **Click the [OK] button.**

   The following message is displayed.



3. **Click the [Yes] button.**

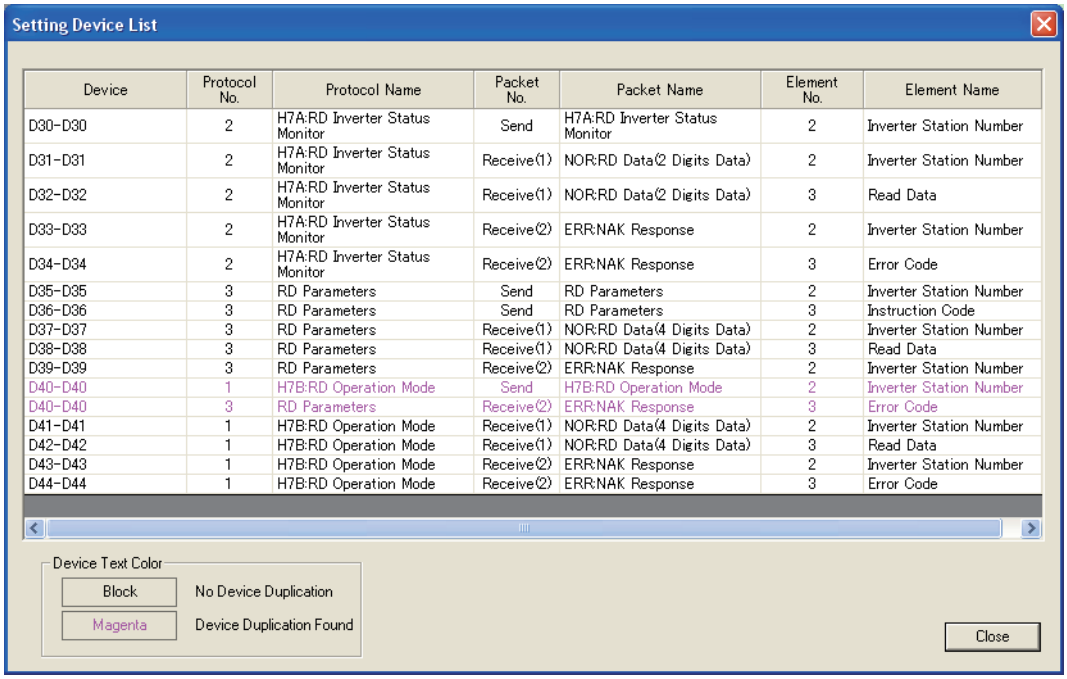
   The devices are set at once.

4.7.5 Confirming set devices in list view

Display a list of devices used in protocols in list view.

Screen display

Select [Tool] ⇒ [Setting Device List].



Device	Protocol No.	Protocol Name	Packet No.	Packet Name	Element No.	Element Name
D30-D30	2	H7A:RD Inverter Status Monitor	Send	H7A:RD Inverter Status Monitor	2	Inverter Station Number
D31-D31	2	H7A:RD Inverter Status Monitor	Receive(1)	NOR:RD Data(2 Digits Data)	2	Inverter Station Number
D32-D32	2	H7A:RD Inverter Status Monitor	Receive(1)	NOR:RD Data(2 Digits Data)	3	Read Data
D33-D33	2	H7A:RD Inverter Status Monitor	Receive(2)	ERR:NAK Response	2	Inverter Station Number
D34-D34	2	H7A:RD Inverter Status Monitor	Receive(2)	ERR:NAK Response	3	Error Code
D35-D35	3	RD Parameters	Send	RD Parameters	2	Inverter Station Number
D36-D36	3	RD Parameters	Send	RD Parameters	3	Instruction Code
D37-D37	3	RD Parameters	Receive(1)	NOR:RD Data(4 Digits Data)	2	Inverter Station Number
D38-D38	3	RD Parameters	Receive(1)	NOR:RD Data(4 Digits Data)	3	Read Data
D39-D39	3	RD Parameters	Receive(2)	ERR:NAK Response	2	Inverter Station Number
D40-D40	1	H7B:RD Operation Mode	Send	H7B:RD Operation Mode	2	Inverter Station Number
D40-D40	3	RD Parameters	Receive(2)	ERR:NAK Response	3	Error Code
D41-D41	1	H7B:RD Operation Mode	Receive(1)	NOR:RD Data(4 Digits Data)	2	Inverter Station Number
D42-D42	1	H7B:RD Operation Mode	Receive(1)	NOR:RD Data(4 Digits Data)	3	Read Data
D43-D43	1	H7B:RD Operation Mode	Receive(2)	ERR:NAK Response	2	Inverter Station Number
D44-D44	1	H7B:RD Operation Mode	Receive(2)	ERR:NAK Response	3	Error Code

4.8 Writing/Reading/Verifying Protocol Settings

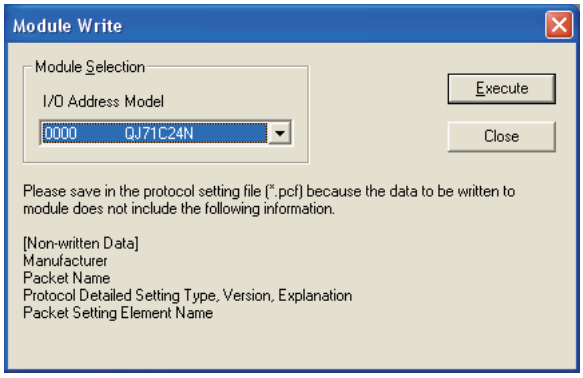
This section explains how to write/read/verify protocol settings to/from/with the module.

4.8.1 Writing/reading protocol settings

Write data of the registered protocol settings to a selected module, and read the protocol settings from a selected module.

Screen display

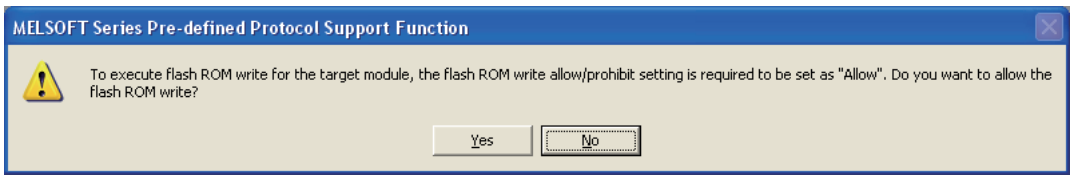
Select [Module Read/Write] ⇒ [Write to Module]/[Read from Module].



Operating procedure

- Select a module and click the Execute button.

  For the write to module process, the following message is displayed.



■ Workaround when the Q series C24N/L series C24 module detects a protocol setting data error

The settings of editable protocols may not be correct when the Q series C24N/L series C24 module detects a protocol setting data error after the protocol settings are written to the module.
In such case, correct the protocol settings according to the following procedure and rewrite them to the module.

Operation

1. Confirm the protocol number, packet number, and element number of the detected error in the protocol setting data error information (buffer memory 4086_H to 4089_H) of the Q series C24N/L series C24 module.
2. Confirm whether or not the following conditions are met in the packet setting in which the error has been detected.
   When any elements of No.1 and any elements of No.2 described in the following table are in the same packet, No.1 must be placed before No.2.

No.	Setting
1	• Conversion Variable (Fixed number of data, Fixed number of digits (1 to 10 digits), No sign character) • Conversion Variable (Fixed number of data, Fixed number of digits (1 to 10 digits), Variable decimal point) • Conversion Variable (Fixed number of data, Variable number of digits, Number of data is 1, Delimiter is comma or space)
2	• Non-conversion Variable (Variable length) • Conversion Variable (Variable number of data) • Conversion Variable (Fixed number of data, Variable number of digits, Number of data is 1, No delimiter) • Conversion Variable (Fixed number of data, Variable number of digits, Number of data is 2 or more) • Non-verified Reception (Variable number of characters)

3. Modify the protocol settings, and rewrite them to the module.

Point

● **Settings which may cause a 'protocol setting data error'**
A protocol setting data error may occur when any of the following data are set and written to the Q series C24N module with the serial number of which the first five digits are '10122'.

Element type	Setting
Conversion Variable	• "Sign" is 'Signed' • "Number of Decimals" is 1 to 9 or 'Variable Point' • "Delimiter" is 'Comma' or 'Space'
Non-verified Reception	• "Data Length" is '0' (variable number of characters)

● **Execution of write to module function during execution of CPRTCL instruction**
An error may occur when the protocol setting data is written to a module during execution of the CPRTCL instruction.

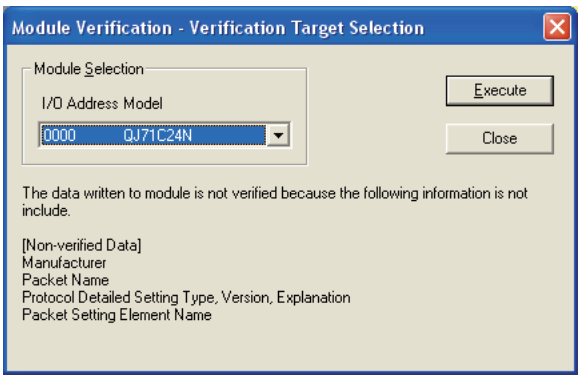
● **Data not to be written to module**
The following data cannot be written to a module. Save these data in a protocol setting file.
- Manufacturer
- Packet Name
- Type, Version, Explanation in the protocol detailed setting
- Element Name in the packet setting

4.8.2 Verifying protocol settings in personal computer side with those in module side

Compare the protocol setting being opened with that written to a selected module.

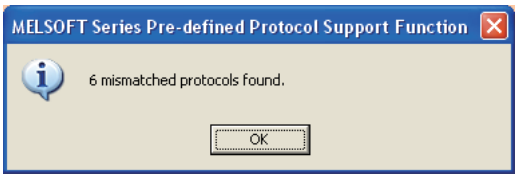
Operating procedure

1. **Select [Module Read/Write] ⇒ [Module Verification].**



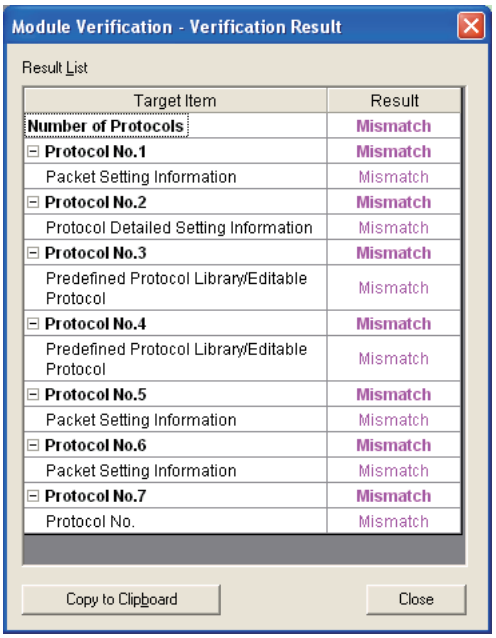
2. **Select a module and click the Execute button.**

   If any mismatches are found, the following message is displayed.



3. **Click the OK button.**

   The verification result screen is displayed.



Display contents

Item	Description
Target Item	Display mismatch items. For items displayed in "Target Item", refer to ■ Contents displayed in "Target Item".
Result	Display 'Mismatch'.

Screen button

● Copy to Clipboard

Copies all contents being displayed on the screen to the clip board in text format.

■ Contents displayed in "Target Item"

The following table shows items displayed in "Target Item" of the verification result screen.

Item		Description
Number of Protocols		This item is displayed when the total of registered protocols is mismatched.
Protocol No.1 to 128		The protocol number of a protocol which include any mismatches is displayed.
	Protocol No.	The first mismatched item is displayed by comparing items in top down order.
	Predefined Protocol Library/ Editable Protocol	
	Protocol Detailed Setting Information	
	Number of Packets	
	Packet Setting Information	

Point

● **Target of verification**
As the following data cannot be written to a module, these data are not compared.
- Manufacturer
- Packet Name
- Type, Version, Explanation in the protocol detailed setting
- Element Name in the packet setting

4.9 Debugging

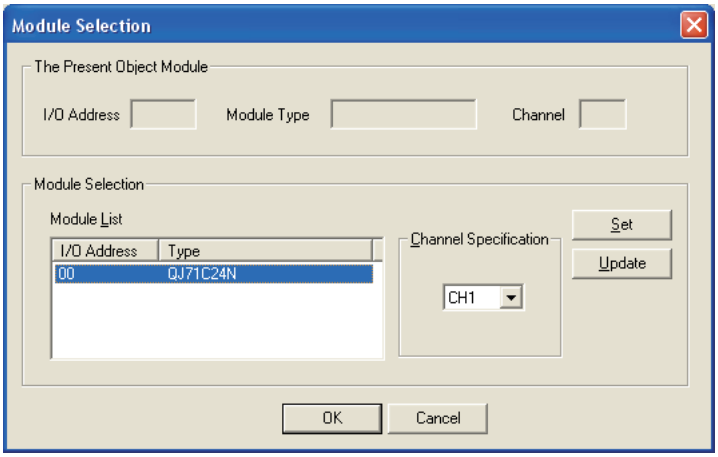
This section explains how to debug the communication processing between the Q series C24N/L series C24 module and device controller.

4.9.1 Selecting debugging target modules

Select a module to be debugged. The protocol execution log display function and the state monitor function are executed against the module selected in this function.

Screen display

Select [Debugging Support Function] ⇒ [Module Selection].



Operating procedure

1. **Set the items on the screen.**

Item	Description
The Present Object Module	Display the information of the selected module.
Module List	Select a debugging target module.
Channel Specification	Select the channel of the module.

2. **Click the Set button.**

   The selected module and channel are set to "The Present Object Module".

3. **Click the OK button.**

   The set values displayed in "The Present Object Module" are set as the target module.

Screen button

- Update

  Displays the latest module list.

4.9.2 Displaying protocol execution logs

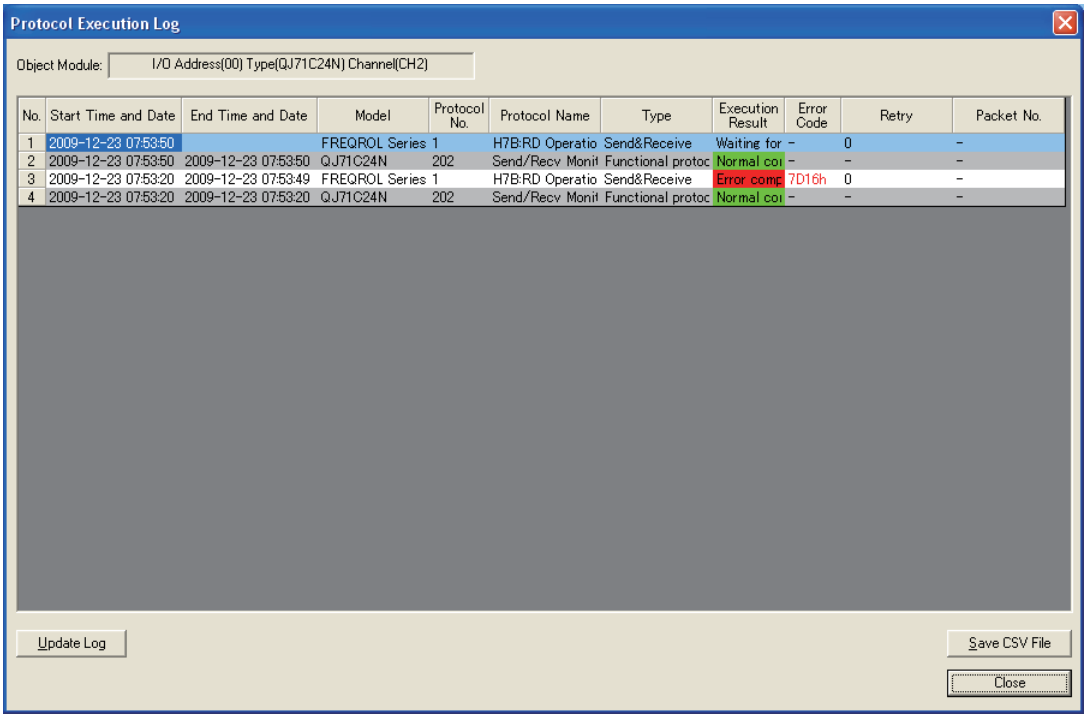
Display the protocol execution logs and the protocol execution results when the protocol settings are set.

Operating procedure

1. **Select a module to be debugged. (☞ Section 4.9.1)**

2. **Select [Debugging Support Function] ⇒ [Protocol Execution Log].**

   The Protocol Execution Log screen is displayed.



Display contents

Item	Description
Object Module	Display the target module (I/O address and module type) and channel of the protocol execution logs being displayed.
No.	Display the execution logs in the order from the latest.
Start Time and Date	Display the start date of the protocol execution.
End time and Date	Display the end date of the protocol execution.
Model	Display the external device name.
Protocol No.	Display the executed protocol number.
Protocol Name	Display the executed protocol name.
Type	Display the communication type of protocol: 'Send Only', 'Receive Only', or 'Send&Receive'. When a functional protocol is executed, "Functional protocol" is displayed. When a protocol is executed using the dedicated instruction (CPRTCL instruction) by specifying its protocol number which is not written to the module, "Unregistered protocol No." is displayed.
Execution Result	Display the execution results of the protocols. Error completion : Displayed with red background. Normal completion: Displayed with light green background. For protocols with the 'waiting for transmission', 'sending', 'waiting for reception', or 'receiving' status, the corresponding logs are displayed in light blue.

(To the next page)

Item	Description
Error Code	Display the error code of error completion in red when the execution result is an error completion. When the result is a normal completion, '-' is displayed.
Retry	Display the number of send retries.
Packet No.	Display the receive packet numbers which are matched by the verification.

Point

● **Execution log option**

The registration conditions of logs can be specified by the execution log option specification for buffer memory (buffer memory address: 40E2H, 40F2H) or by the various control designations of the intelligent function module utility.

The following are the registration conditions.

0th bit is OFF (0): Stores the execution log for the protocols with the error completion only.

0th bit is ON (1) : Stores the execution status and the execution logs of all protocols.

Note that, only the logs of error protocols are displayed at the default setting. To display all protocol logs, set the registration condition in "Execution log options" of the various control designations in the intelligent function module data.

For details, refer to the following manuals.

☞ Q Corresponding Serial Communication Module User's Manual (Basic)

☞ MELSEC-L Serial Communication Module User's Manual (Basic)

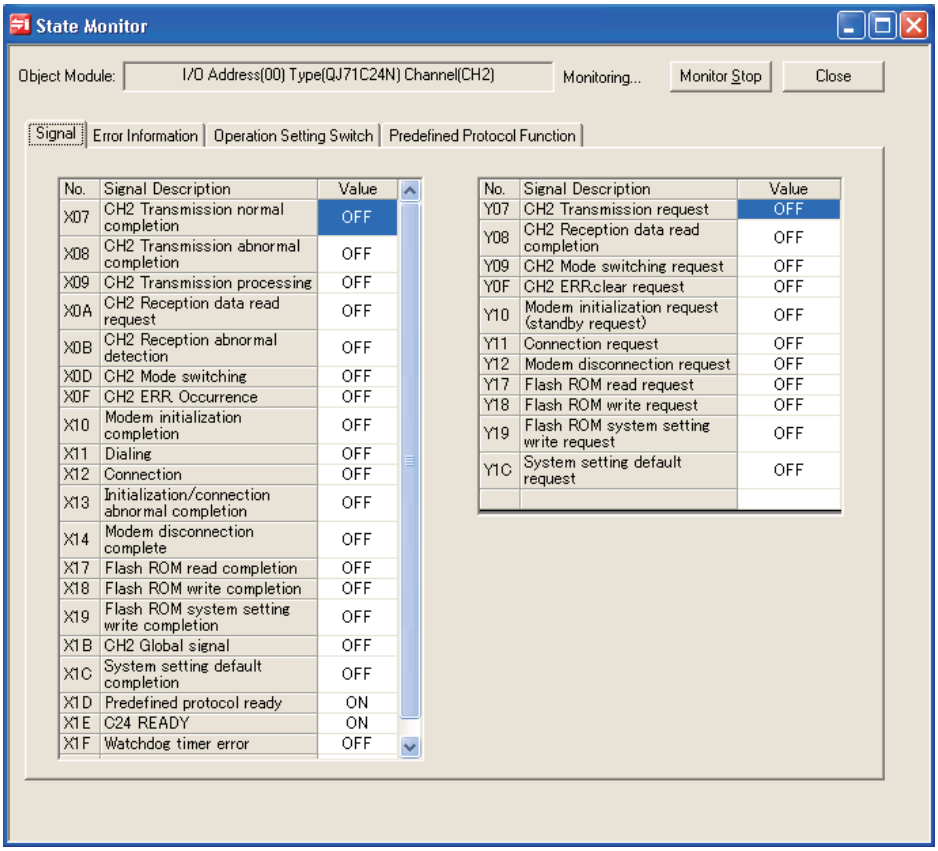
4.9.3 State monitor

Monitor signals, communication error information, operation setting switches, and protocol execution status.
For details, refer to the user's manual of each module.

Operating procedure

1. **Select a module to be debugged. (☞ Section 4.9.1)**

2. **Select [Debugging Support Function] ⇒ [State Monitor].**
   The State Monitor screen is displayed.



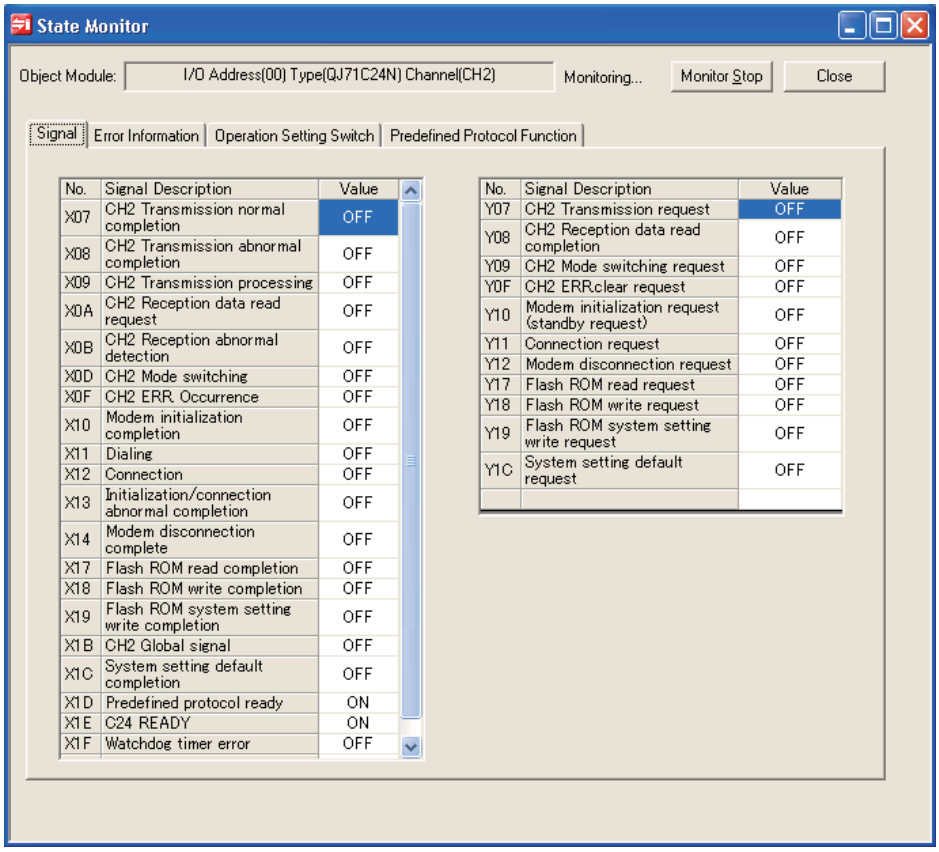
Display contents

Item	Description
<<Signal>>	Display the ON/OFF status of the X/Y/RS-232 signals. ☞ ■ Display contents of <<Signal>>
<<Error Information>>	Display the information of errors, such as a communication error. ☞ ■ Display contents of <<Error Information>>
<<Operation Setting Switch>>	Display the information of the operation switches, mode switch, and etc. ☞ ■ Display contents of <<Operation Setting Switch>>
<<Predefined Protocol Function>>	Display the information of the protocol execution status and etc. ☞ ■ Display contents of <<Predefined Protocol Function>>

■ Display contents of <<Signal>>

Screen display

Select [Debugging Support Function] ⇒ [State Monitor] ⇒ <<Signal>>.



Display contents

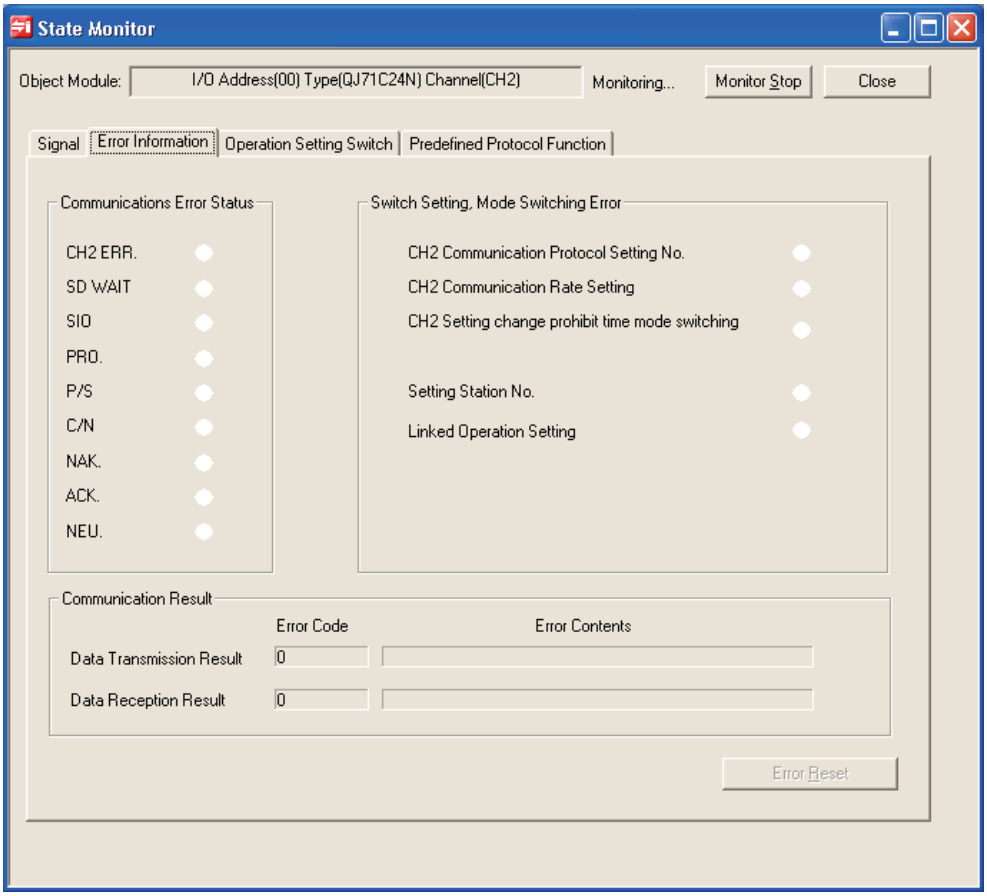
Item	Description
X signal state monitor	Display the ON/OFF status of the X signals.*1
Y signal state monitor	Display the ON/OFF status of the Y signals.
RS-232 signal monitor	Display the ON/OFF status of the RS-232 control signals.

*1 : Protocols can be executed while the Predefined protocol ready (X1D) is ON.

■ Display contents of <<Error Information>>

Screen display

Select [Debugging Support Function] ⇒ [State Monitor] ⇒ <<Error Information>>.



Display contents

Item	Description
Communication Error Status	Display the communication error status.
Switch Setting, Mode Switching Error	Display the switch setting and/or mode selection error status.
Communication Result	Display the error status of the communication result.

Screen button

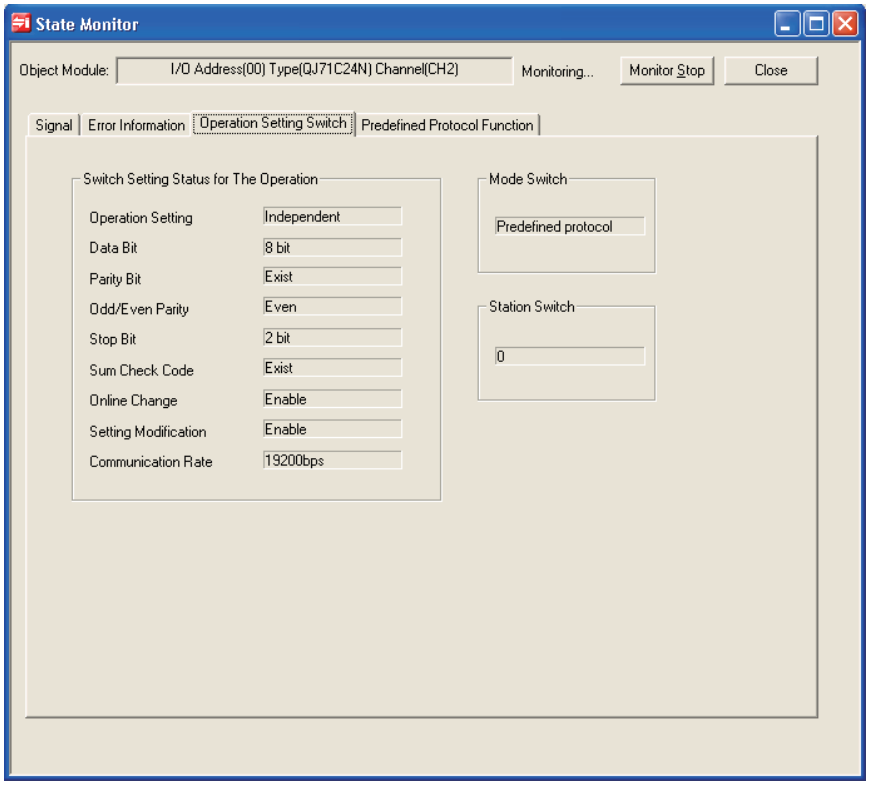
- Error Reset

  Resets the error information when XnE on CH1 or XnF on CH2 is ON.

■ Display contents of <<Operation Setting Switch>>

Screen display

Select [Debugging Support Function] ⇒ [State Monitor] ⇒ <<Operation Setting Switch>>.



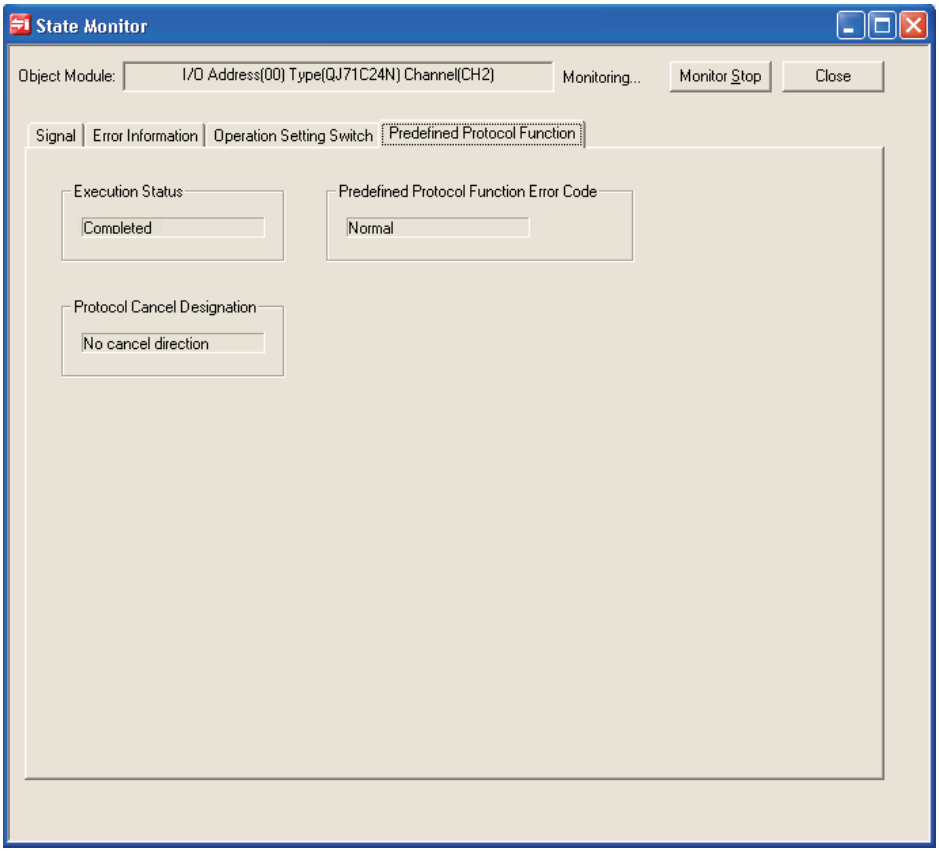
Display contents

Item	Description
Switch Setting Status for The Operation	Display the operation switch setting status.
Mode Switch	Display the communication protocol setting.
Station Switch	Display the station number setting.

■ Display contents of <<Predefined Protocol Function>>

Screen display

Select [Debugging Support Function] ⇒ [State Monitor] ⇒ <<Predefined Protocol Function>>.



Display contents

Item	Description
Execution Status	Display the protocol execution status.
Protocol Cancel Designation	Display the protocol cancel designation status.
Predefined Protocol Function Error Code	Display the error code of the result from the error completion.

4.10 Printing Protocol Settings

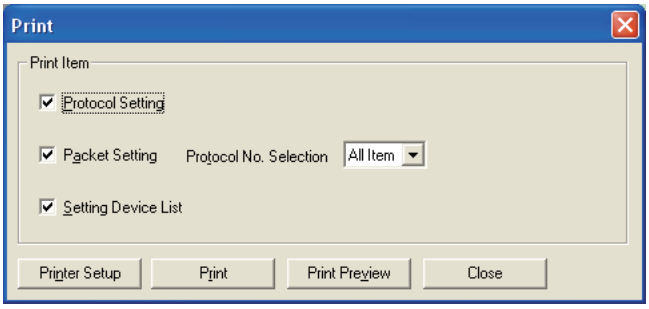
This section explains how to print protocol settings, packet settings, and setting device lists.

4.10.1 Print screen

Execute printing.

Screen display

Select [File] ⇒ [Print] ( ).



Operating procedure

1. **Set "Print item".**

2. **Click the** Print **button.**

Screen button

- Printer Setup

  Displays the Printer Setting screen.

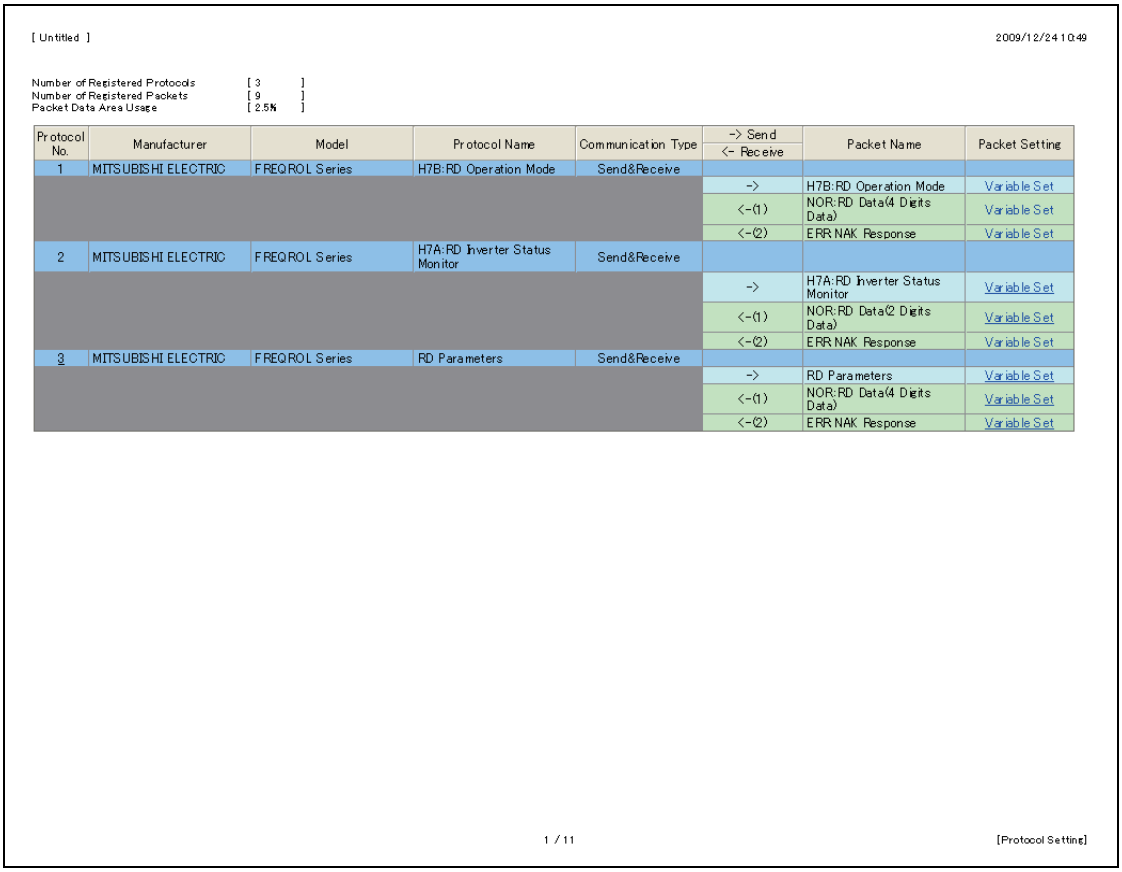
- Print Preview

  Displays the Print Preview screen.

4.10.2 Print examples

The following shows print examples.

■ Protocol setting



[Untitled] 2009/12/24 10:49

Number of Registered Protocols [3]
Number of Registered Packets [9]
Packet Data Area Usage [2.5%]

Protocol No.	Manufacturer	Model	Protocol Name	Communication Type	-> Send / <- Receive	Packet Name	Packet Setting
1	MITSUBISHI ELECTRIC	FREQROL Series	H7B:RD Operation Mode	Send&Receive			
					->	H7B:RD Operation Mode	Variable Set
					<-(1)	NOR:RD Data(4 Digits Data)	Variable Set
					<-(2)	ERR:NAK Response	Variable Set
2	MITSUBISHI ELECTRIC	FREQROL Series	H7A:RD Inverter Status Monitor	Send&Receive			
					->	H7A:RD Inverter Status Monitor	Variable Set
					<-(1)	NOR:RD Data(2 Digits Data)	Variable Set
					<-(2)	ERR:NAK Response	Variable Set
3	MITSUBISHI ELECTRIC	FREQROL Series	RD Parameters	Send&Receive			
					->	RD Parameters	Variable Set
					<-(1)	NOR:RD Data(4 Digits Data)	Variable Set
					<-(2)	ERR:NAK Response	Variable Set

1 / 11 [Protocol Setting]

■ Packet setting

[FA-E700.pcf] 2009/12/22 00:00

Registered Protocol No. [1]
Manufacturer [MITSUBISHI ELECTRIC]
Model [FREQROL Series]
Protocol Name [H7B:RD Operation Mode]
Packet Type [Send Packet]
Packet Name [H7B:RD Operation Mode]

Element No.	Element Type	Element Name	Element Setting
1	Header	ENQ	[ENQ](1Byte)
2	Conversion Variable	Inverter Station Number	[D300-D300](->HEX/Fixed Number/Number of data (1)/Digit (2)/Padded (0)/Word/Delimiter (none))
3	Fixed Data	Instruction Code	"7B"(2Byte)
4	Fixed Data	Waiting Time	"0"(1Byte)
5	Check Code	Sum Check	(Object element:2-4/Sum Check/Hexadecimal/No calculation/Forward/2Byte)
6	Terminator	CR	[CR](1Byte)

2 / 5 [Packet Setting]

■ Setting device list

[Untitled] 2009/12/24 10:49

Device	Protocol No.	Protocol Name	Packet No.	Packet Name	Element No.	Element Name
D30-D30	2	H7A:RD Inverter Status Monitor	Send	H7A:RD Inverter Status Monitor	2	Inverter Station Number
D31-D31	2	H7A:RD Inverter Status Monitor	Receive(1)	NOR:RD Data(2 Digits Data)	2	Inverter Station Number
D32-D32	2	H7A:RD Inverter Status Monitor	Receive(1)	NOR:RD Data(2 Digits Data)	3	Read Data
D33-D33	2	H7A:RD Inverter Status Monitor	Receive(2)	ERR:NAK Response	2	Inverter Station Number
D34-D34	2	H7A:RD Inverter Status Monitor	Receive(2)	ERR:NAK Response	3	Error Code
D35-D35	3	RD Parameters	Send	RD Parameters	2	Inverter Station Number
D36-D36	3	RD Parameters	Send	RD Parameters	3	Instruction Code
D37-D37	3	RD Parameters	Receive(1)	NOR:RD Data(4 Digits Data)	2	Inverter Station Number
D38-D38	3	RD Parameters	Receive(1)	NOR:RD Data(4 Digits Data)	3	Read Data
D39-D39	3	RD Parameters	Receive(2)	ERR:NAK Response	2	Inverter Station Number
D40-D40	1	H7B:RD Operation Mode	Send	H7B:RD Operation Mode	2	Inverter Station Number
D40-D40	3	RD Parameters	Receive(2)	ERR:NAK Response	3	Error Code
D41-D41	1	H7B:RD Operation Mode	Receive(1)	NOR:RD Data(4 Digits Data)	2	Inverter Station Number
D42-D42	1	H7B:RD Operation Mode	Receive(1)	NOR:RD Data(4 Digits Data)	3	Read Data
D43-D43	1	H7B:RD Operation Mode	Receive(2)	ERR:NAK Response	2	Inverter Station Number
D44-D44	1	H7B:RD Operation Mode	Receive(2)	ERR:NAK Response	3	Error Code

11 / 11 [Setting Device List]

MELSOFT

APPENDIX

Appendix 1 List of Toolbars and Shortcut Keys. App-2
Appendix 2 Compatibility with GX Configurator-QP App-5
Appendix 3 Procedure for Use of GX Configurator-QP App-5

Appendix 1 List of Toolbars and Shortcut Keys

This section shows the list of toolbars and shortcut keys that can be used in operations of the intelligent function module.

For (Common) indicated in the Reference column and details of functions not described in this section, refer to the following manual.

☞ GX Works2 Version 1 Operating Manual (Common)

Appendix 1.1 Common toolbars and shortcut keys

The following explains the toolbars that are available regardless of the editing target and the corresponding shortcut keys.

■ "Program Common" toolbar icons

The following table shows the "Program Common" toolbar icons and the corresponding shortcut keys.

Toolbar icon	Shortcut key	Corresponding menu	Description	Reference
	–	Write to PLC	Write data to the programmable controller CPU.	(Common)
	–	Read from PLC	Read data from the programmable controller CPU.	
	–	Start Monitoring (All Windows)	Start monitoring all windows being opened.	
	–	Stop Monitoring (All Windows)	Stop monitoring all windows being opened.	
	F3	Start Monitoring	Start monitoring the window being operated.	
	Alt + F3	Stop Monitoring	Stop monitoring the window being operated.	

■ "Docking Window" toolbar icons

The following table shows the "Docking Window" toolbar icons.

Toolbar icon	Shortcut key	Corresponding menu	Description	Reference
	–	Intelligent Function Module Monitor	Display/hide the Intelligent Function Module Monitor window.	Section 2.4
	–	Intelligent Function Module Guidance	Display/hide the Intelligent Function Module Guidance window.	Section 3.5.6

■ "Intelligent Function Module" toolbar icons

The following table shows the "Intelligent Function Module" toolbar icons.

Toolbar icon	Shortcut key	Corresponding menu	Description	Reference
	–	QD75/LD75 Positioning Module Wave Trace	Execute a wave trace of the QD75/LD75 positioning module.	Section 3.5.3
	–	QD75/LD75 Positioning Module Location Trace	Execute a location trace of the QD75/LD75 positioning module.	Section 3.5.4
	–	Serial Communication Module Circuit Trace	Execute a circuit trace of the serial communication module.	Section 3.7.2
	–	QD75/LD75 Positioning Module Test Monitor	Execute a positioning monitor of the QD75/LD75 positioning module.	Section 3.5.1
	–	QD75/LD75 Positioning Module Test	Execute a positioning test of the QD75/LD75 positioning module.	Section 3.5.2
	–	Offset/Gain Setting of Temperature Input Module	Execute offset/gain setting of the temperature input module.	Section 3.2.1
	–	Offset/Gain Setting of Analog Module	Execute offset/gain setting of the analog module.	Section 3.1.1

■ Other shortcut keys

The following table shows other shortcut keys that are available regardless of the editing target.

Toolbar icon	Shortcut key	Corresponding menu	Description	Reference
–	Ctrl + Shift + E	Add New Module	Add the intelligent function module data to the project being edited.	Section 2.1.1
–	Shift + F3	Start Watching	Start monitoring the current values of registered devices/labels and intelligent function module.	Section 2.4
–	Shift + Alt + F3	Stop Watching	Stop monitoring the current values of registered devices/labels and intelligent function module.	

Appendix 1.2 Shortcut keys for operating intelligent function module data

The following explains the toolbar icons and the corresponding shortcut keys for operating intelligent function module data.

■ Toolbar icons for positioning monitor function

The following table shows the toolbar icons for the positioning monitor function.

Toolbar icon	Shortcut key	Corresponding menu	Description	Reference
	-	-	Monitor the operating status of positioning module.	Section 3.5.1
	-	-	Monitor the start history.	
	-	-	Monitor the error history.	
	-	-	Monitor the warning history.	
	F3	-	Start the positioning monitor.	-
	Alt + F3	-	Stop the positioning monitor.	-

■ Toolbar icons and shortcut keys for predefined protocol support function

The following table shows the toolbar icons and the corresponding shortcut keys for the predefined protocol support function.

Toolbar icon	Shortcut key	Corresponding menu	Description	Reference
	Ctrl + N	New	Create a new protocol setting.	Section 4.5.1
	Ctrl + O	Open	Open an existing protocol setting.	Section 4.5.2
	Ctrl + S	Save	Save the protocol information.	Section 4.5.3
	Ctrl + C	Copy	Copy the selected data.	–
	Ctrl + V	Paste	Paste the cut/copied data at the cursor position.	–
	–	Print	Print the protocol information.	Section 4.10
	–	Write to Module	Write data to a module.	Section 4.8.1
	–	Read from Module	Read data from a module.	

Appendix 2 Compatibility with GX Configurator-QP

The QD75/LD75 positioning module functions in GX Works2 are different in functionality and operability compared to the functions of GX Configurator-QP. Review the following precautions before use.

GX Configurator-QP function	Precautions on using GX Works2
Navigation	Use GX Configurator-QP*1
Sampling monitor	Use the sampling trace function. (☞ GX Works2 Version 1 Operating Manual (Common))
Diagnostics	Use the positioning test function. (☞ Section 3.5.2)

*1 : GX Configurator-QP is included on the CD-ROM of GX Works2. For the installation procedure, refer to Appendix 3. Note that GX Works2 and GX Configurator-QP can be used simultaneously.

Appendix 3 Procedure for Use of GX Configurator-QP

GX Configurator-QP is included on the CD-ROM (Disc2) of GX Works2 and can be installed by the following procedure.

Operating procedure

1. **Copy the compressed file of GX Configurator-QP from the CD-ROM (Disc2) onto HDD of the personal computer.**

   The compressed file of GX Configurator-QP means the following file on the CD-ROM.

   • 'CD-ROM drive'\Others\qp2-xxx.dat*1

   *1 : 'xxx' are replaced with numbers and/or alphabets.

2. **Change the extension of the file copied onto the personal computer from 'dat' to 'exe'.**

   The file name changes from 'qp2-xxx.dat' to 'qp2-xxx.exe'.

3. **Double-click 'qp2-xxx.exe' and unpack it to the desired directory.**

4. **Execute 'SETUP.EXE' among the unpacked files.**

   The installation of GX Configurator-QP starts.
   For details of the installation procedure, refer to the following manual.
   Use the product ID of GX Works2 for the installation.
   ☞ GX Configurator-QP Version2 Operating Manual

MEMO

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GX Works2 Version1
Operating Manual
(Intelligent Function Module)

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SH(NA)-080921ENG-G(1109)KWIX	

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